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SOAP and SANITARY CHEMICALS

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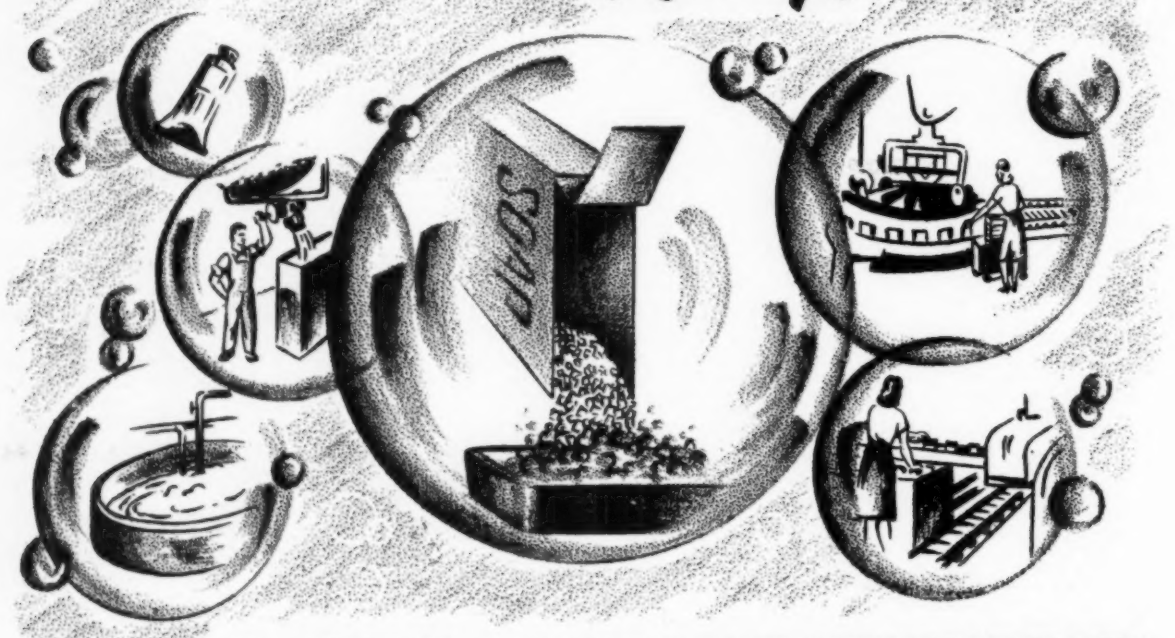
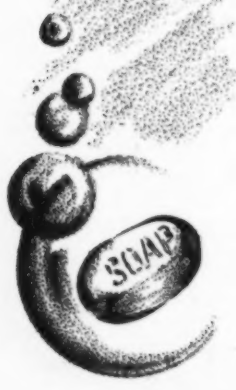


in SOAP and ALLIED INDUSTRIES



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A NAME AS OLD AS THE AMERICAN CHEMICAL INDUSTRY

AS THE EDITOR SEES IT

PRICES for leading brands of soaps were moved up an average of ten per cent at the beginning of October. That this advance had been expected was common knowledge. If the price increase had been twice the ten per cent figure, we doubt that anybody would have been surprised. Since the time when the recent low of soap prices was established, tallow had advanced more than fifty per cent. Manufacturers of private brand soaps, industrial soaps and specialties had moved their prices up previously, but not to an extent comparable with the sharp rise in tallow and oils.

As far as we can determine, most soap products being sold today are priced at figures well below a comparable level for the tallow market. But probably most of the tallow being shipped as soap at the present time averaged closer to fifteen cents than to twenty. We doubt that soapers are losing any money on actual cost of current shipments, but at the same time, we also doubt that they are making any if they base cost on tallow replacements. The soap market has completely reversed its position of three months ago. Tallow prices may not hold at full current levels through the balance of the year, but we do not feel that they will go too much lower in that period. If things work out on such a pattern, we cannot see how soap prices can avoid going at least twenty per cent above where they now stand.

WHEN tallow recently bounced up approximately fifty per cent from its low level of a couple of months ago, and choice grades were practically unobtainable in a number of local markets around the country, not many soapers became too excited. In fact a few of our friends in the industry reminded us of the cat which had just eaten the canary. Some purchasing departments appeared to be downright relieved, probably because the market rise has helped them to justify to some extent high priced inventories of tallow and grease, and will give them an opportunity to work them off at better soap prices.

Although we have not heard of any purchasing agents in the soap industry shooting themselves or jumping off high bridges, we feel that the fat and oil market of the past six months has driven some of them almost to this point. That this period has been a purchasing agents' nightmare is to put it mildly. We are still looking for the fellow who called the market correctly on all of its turns and wild gyrations. The sharp rise recently brought the first smiles among buyers which have been reported in many a moon. And we can remember when an eighth of a cent move in tallow was a cause for excitement. How times have changed!

AS FAR as fats and oils are concerned, no soaper can formulate anything resembling a consistent purchasing policy. As long as export and import controls continue, just so long will this uncertainty continue, and just so long will there be repetition of violent fluctuations in market prices. No market can exhibit or retain any degree of stability when it is subject to political juggling by a government agency as is the fat and oil market by USDA. If the basic object in the operation of controls is not to put oil and fat prices up, and keep them up,—into which manipulation of the IEFC export program fits too perfectly for words,—then we must admit such operation has every earmark of such objective.

As long as there are oil and fat controls, the Department of Agriculture will continue to manipulate the market to back up its price support program for domestic oil seeds and grains. Like the practical joker, it will whenever such is deemed necessary jerk the chair out from under

any and all domestic fat and oil consuming industries. Its erratic and unpredictable decisions will continue to harass purchasing agents who will find those oils and fats which are plentiful one day, off the market and unavailable the next. And once a user has covered his needs, probably at a high price, the market cork can be pulled without warning, causing further serious inventory losses.

Soapers and other fat consuming industries wonder when this juggling of the oil and fat market through government manipulation may end. Off hand, we don't know, but we will hazard a guess that it will be after November 4, 1948. Following that date, we predict that the starving peoples of the world, to feed whom, we are told, our fat supplies are being shipped out of the country,—including millions of pounds of inedible greases and oils,—will no longer be hungry, will no longer need our fats to fight off that sinister counterpart of hunger, communism. The fight against world starvation will have been won, the American farmers will have voted,—and then the oil and fat markets can go completely to hell without the benefit of government assistance.

THAT any soap or detergent product might find use in cleaning city streets on a large scale seems on first consideration to be a trifle fantastic. But this is not as fantastic as it might appear. The Canadian city of Toronto recently completed what turned out to be a successful experiment in flushing public thoroughfares with a dilute solution of a well-known synthetic organic detergent. Five pounds of the material were used in a two - thousand gallon flusher tank. Comparative tests were run with plain water and with the detergent solution. Although the water flushed away dust and dirt, it did not touch oil and grease which were in turn removed quite effectively by the detergent.

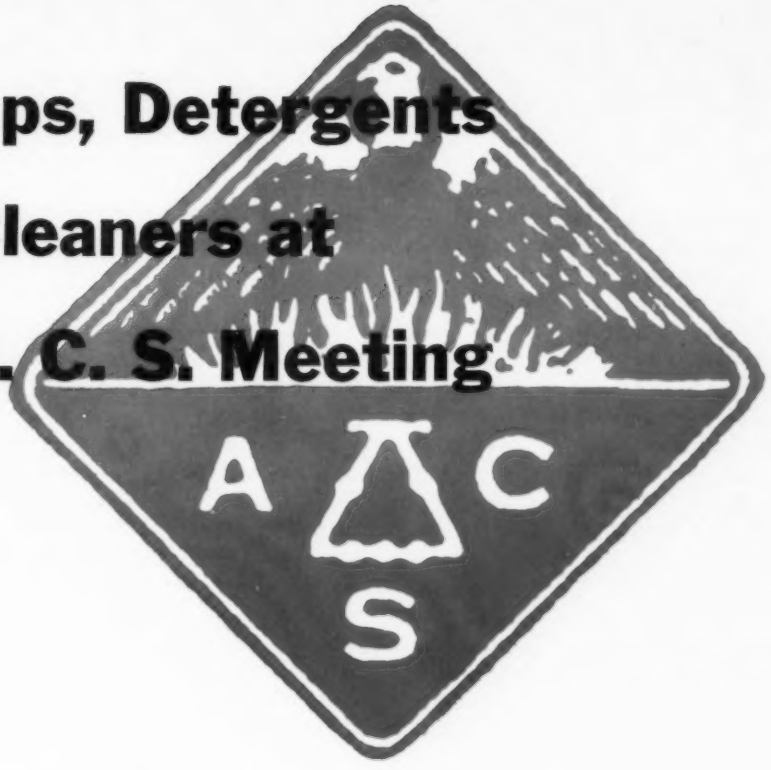
The experiment received wide publicity in Canadian newspapers and undoubtedly focused considerable attention on these newer cleaning agents. Translating any use for synthetic detergents such as street cleaning into pounds of consumption,—in addition to their constantly widening market in the usual industrial and household channels,—could mean a further large tonnage added to present potentialities. Maybe the expert who estimated five billion pounds of soap and three billion of synthetic detergents as the market level by 1960 erred on the low side.

JUDGING from current activity of the Federal Trade Commission, it plans to go right down the line of shampoos, floor waxes, moth products, and certain other household chemical specialties. Obviously, it plans to confine advertising and promotional claims of manufacturers within much more narrow limits than anything previously attempted. FTC allegations in the Fitch shampoo case indicate the extent to which the Commission apparently intends to proceed in carrying out what has long threatened to be a broadening campaign to regulate advertising claims. That such expanded activity had been promised several years ago, and more or less anticipated, has been apparent for some time. The Fitch complaint seems to be only the first of a new list in the household specialty field.

In the case of floor waxes, non-slip, water repellency, and durability are very obviously under close FTC scrutiny at present. Attempts to formulate a code of trade practice heralds what may come later. The same is true of moth products. They too are on the spot. All of which indicates to us that the sales promotional claims of every product should be reviewed once again,—and now,—by its manufacturer.

We do not advocate backing down as soon as the FTC comes into the picture,—of which we have been accused,—but we do advocate a sensible attitude toward this renewed FTC activity. We suggest a careful re-examination of advertising claims and an unbiased determination of their validity in anticipation that they may be attacked. No manufacturer can depend wholly on his trade association to guide him or guard his interests. His advertising is his responsibility alone. To meet the situation sensibly is to look the facts squarely in the face and be guided accordingly.

Discuss Soaps, Detergents and Metal Cleaners at New York A. C. S. Meeting



REPORTS on recent research in the fields of soaps, synthetic detergents, cleaners and insecticides, which may shortly play an important role in shaping future developments on these products, were prominent in the program of the 112th national meeting of the American Chemical Society held in New York during the week of September 15th. Eleven thousand were in attendance at this meeting, the largest in the history of the chemical profession, and over a thousand technical papers were presented.

In reviewing the increasing share of the chemical raw materials market being sought by the petroleum industry, Dr. Gustav Egloff, Universal Oils Products Co., Chicago, commented upon the United States adaptation of the German Fischer-Tropsch process for the production of hydrocarbons and oxygenated compounds from natural gas. While the plants are designed to produce motor fuels, the production of chemicals particularly the halogenated hydrocarbons useful to the soap and sanitary chemicals industry will be an important part of the operation.

Glycerine, which has been in short supply, can also be produced from petroleum by a reaction involving halogen intermediates from the German process. Commercial manufacture of synthetic glycerine, according to Dr. Egloff, is expected to start in 1948 in a seven million dollar plant having an annual capacity of thirty to thirty-five million pounds.

Although he did not mention it, Dr. Egloff was probably referring to the production of synthetic glycerine, scheduled to start in Shell Chemical Corporation's new plant at Houston, Texas, which will produce glycerine from propylene, chlorine and caustic soda.

Among the sulfur compounds made from petroleum hydrocarbons are the synthetic detergents, 1947 production of which was estimated by Dr. Egloff to be double the 1946 figure of 125 million pounds. His view that a billion pounds of detergents representing twenty-five per cent of the annual soap production is a possibility within the next few years, agrees with those previously published.

Although papers of immediate industrial significance to the soap industry are traditionally few in number at the society's meetings, considerable progress, particularly along physico-chemical studies of soaps was reported. Each meeting of the society brings more reports offering fundamental data on the behavior of soaps and gradually the scientific structure underlying the boiling and finishing of soaps is being completed.

In addition to papers by James W. McBain, Stanford University, Robert D. Vold, University of Southern California, and a number of co-workers, on various physical and chemical properties of soaps in the collodial state, interesting papers were offered regarding the solubilization properties of soaps, particularly the solubilization of dimethyl phthalate, now finding industrial use as an insect repellent. From these highly scientific papers, much information can be gleaned which when projected into the industry, takes a turn toward more practical application.

Two papers of practical application were those of Dr. Lawrence H. Flett, director of new products division, National Aniline Division, Allied Chemical & Dye Corp., New York,

concerning synthetic detergents as products of applied research, and of Dr. Irving Reich, Foster Dee Snell, Inc., New York, explaining the efficiency of diphase metal cleaners as compared to the stable emulsion types.

In a symposium held by the Division of Agricultural and Food Chemistry on insecticides in food production a number of interesting papers were presented offering information of value both to the manufacturer and supplier of household insecticides as well as of insecticides for agricultural uses.

ABSTRACTS and summaries of the papers on soaps, cleaners, synthetic detergents as well as those on insecticides follow:

A paper on "Differential Thermal Analysis of Soap Bars Subjected to Various Processing Conditions", by Robert D. Vold, Marjorie J. Vold, and Beverly Griffiths, Univ. Southern California, points out that differential thermal analysis has been carried out on bars of sodium soap of a typical commercial fat stock, containing from 10 to 38 per cent water and subjected to intense mechanical agitation both above and below the temperature at which, for the given composition, formation of soap boiler's neat soap is complete.

That the two sets of processing conditions result in different phase conditions in the bars at room temperature, previously established by x-ray investigations, is confirmed by the fact that the two sets of bars exhibit somewhat different phase changes on heating. The results show that the difference produced by the mechanical treatment is not erased by heating the samples to 130°C., at least for short periods.

At temperatures below that of formation of neat soap, the processed bars undergo phase changes whose temperature and magnitude of heat transition vary with time and history of the sample. These transitions disappear on aging over periods of the order of from a few months to two years.

The hypothesis is advanced that, in addition to the differences in crystal type, the working may produce a microscopically nonhomogeneous distribution of water in soap which reverts to uniformity only very slowly at room temperature.

"Relations between Rheological Behavior, Phase State, and Processing Conditions in Soap - Water Systems" is the title of another of Dr. Vold's papers in collaboration with Christine C. Konecny, and Luther L. Lyon, University of Southern California. This work was undertaken to investigate further the equilibrium phase diagram of soap-water systems in the region of crystalline phases, and to determine the effect of varying mechanical and thermal treatment on the phases formed and on the rate at which phase changes or alterations in crystallite size and orientation occurred with time. Yield value-temperature curves were determined on two sets of samples of commercial soap with 10 to 40 per cent water, one prepared with violent agitation in the soapboiler's neat soap phase and the other at lower temperatures. These experiments were repeated after varying lengths of time, and on samples subjected to various thermal and drying cycles.

Results indicate that none of the processing conditions employed resulted in the formation of phases stable at room temperature.

The first paper on solubilization by means of soaps is titled "Soap Micelles that Solubilize Dimethyl Phthalate, Insoluble in Water and in Hydrocarbons" and was presented by Dr. McBain and Harriette McHan, Stanford University. It states that the solubilization of a water-insoluble, and straight-chain hydrocarbon-insoluble substance, dimethyl phthalate, has been measured in varying concentrations of neutral, aqueous potassium laurate. In 0.1N soap solution the amount solubilized is nearly 1 mole of phthalate to 1 mole of soap, the proportion being at a pronounced maximum for this concentration. Potassium chloride greatly diminishes the solubilization.

The non-ionic detergent "Triton X 100" also solubilizes the phthalate with a mole ratio of 0.6, which again decreases rapidly upon the addition of potassium chloride. However, phthalate and isopropyl benzene are miscible in all proportions, which may account for this ratio of solubility due to similarity of structure. A cation-active detergent, lauryl pyridinium chloride, yields a mole ratio of 0.2 or less.

A paper on general fundamental theory on solubilization by colloidal miscelles is that titled "Types and Mechanism of Solubilization" by H. B. Klevens, Firestone Tire and Rubber Co., Akron. The paper states that there are essentially two major types of solubilization: (1) that in which the solubilized material is incorporated in the hydrocarbon atmosphere of the hydrophobic ends of the soap molecules in the micelle and (2) that in which the solubilized material lies on or near the external surface of the micelle or becomes incorporated in the micelle, possibly as a mixed micelle. There are probably two subtypes in this group: (1) soap-dye systems which are characterized by change in fluorescence of the dye due to adsorption and orientation of the dye molecules on the surface of the micelles, and (2) systems in which the solubilized molecule and the soap molecule are similar, so that a mixed micelle is possible. Various examples of these classes are presented and explanations of the differences found are advanced.

A paper by Irving Reich and Foster Dee Snell, Foster D. Snell, Inc., New York, titled "Diphase Metal Cleaners. II. Relation of Detergent Performance to Emulsion Cleaner Stability" compares the efficiency of metal cleaners of the diphase type with those of the stable emulsion type. Diphase metal cleaners are characterized by the following properties:

1—An aqueous phase and a solvent phase simultaneously contact the soiled metal surface. Neither phase is completely emulsified in the other.
2—The solvent phase dissolves grease and preferentially wets the metal surface.
3—The aqueous phase dissolves water-soluble soil and preferentially wets many mineral soils.
4—The solvent phase is of low viscosity.
5—The solvent phase shows some tendency to emulsify in the aqueous phase or in a suitable rinse liquid.

A paper on Synthetic Detergents by Dr. Flett will be published in an early issue of "Soap".

Cleaning tests on metal panels coated with various soils have shown diphase cleaners to be much more effective than stable emulsion cleaners.

A solution of 11 per cent of triethanolamine oleate in 89 per cent mineral spirits constitutes a diphase cleaner when mixed with water and properly applied. It can be constituted a stable emulsion by very vigorous agitation, by the addition of additional soap, or by dissolving the oleic acid in the mineral spirits and the triethanolamine in water, then mixing the two phases. In any of these cases the efficiency of the cleaner is lost. Thus, contrary to widespread industrial practice, unstable rather than stable emulsions should be sought.

Solvent droplets in stable emulsions are coated with films of emulsifying agent and hence are unable to contact the metal and dissolve soil. Experiments have demonstrated that diphase cleaners coat metal surfaces with films of solvent, while stable emulsions do not. Such cleaning effect as stable emulsions do have can be attributed to limited instability under conditions of use with consequent discharge of some free solvent.

Umber dispersion tests run by the technic of Snell indicate that diphase cleaners are capable of suspending large quantities of soil, while stable emulsions of similar composition are no better in this respect than water. Inability to suspend soil leads to soil throwback and recontamination of partly cleaned work.

Diphase cleaners are capable of great flexibility in solving problems raised by special types of soil, special metals, and specifications for finished surfaces. They can be so used as to leave the metal surface chemically clean and ready for plating or other finishing operations. They can also be used so as to leave the metal surface with a rust-protective film. Their use in the latter way had an important bearing on production of metal parts during the war.

THE paper by Dr. Lawrence Flett titled "Synthetic Detergents—Application Research Methods" as might be expected from the title deals more with the importance of application research in industry than it does with new developments in the field of synthetic detergents. Dr. Flett pointed out that application research is carried out on only those chemicals which might prove to have market value. Generally such research is carried out by both the manufacturer and the consumer. The synthetic detergent is a product of application research in that it was developed because of the dyer's troubles with the use of soap. Fifty years after the development of the first of these products, the sulfonated oils, a group of surface-active agents known as wetting agents were developed. These products, however, lacked the high dispersive action that makes soap a washing agent. This led to the development of agents that had dispersing as well as wetting and penetrating properties — the synthetic detergent found on the market today.

The most reliable estimation of the value of synthetic detergents is not obtained by laboratory testing but by a comprehensive study under practical operating conditions. Too often testing methods are developed which become so important to the operator that he is not able to visualize the utility of a product unless it satisfies certain arbitrary testing methods.

In detergent application research, stated Dr. Flett, there are different methods of approach. One method is to find the things which the synthetic detergents will do more easily or more quickly than soap. Their speedy action has made possible a saving of time in substantially all woolen textile processes. However, according to Dr. Flett, it takes the same synthetic detergent an extraordinarily long time to wash cotton. This is due to the fact that the detergent in the test causes the lamp black to penetrate into the cotton fibre. Such a property is harmful for washing soiled fabric but useful for washing cotton prints where an agent which causes the dye to penetrate the cotton fibre is very valuable.

Tests determining the rapidity of synthetic detergents as metal cleaners point out that when synthetic detergent is added to the alkaline bath, the metal is completely clean in less than one minute. With the alkali alone, the metal is still soiled after eight minutes immersion.

Washing in neutral solution is a requirement for some processes and for some people who cannot tolerate alkaline solution on their skin. The synthetic detergents are particularly effective where they must be used in acid treating solutions and where the formation of lime soaps of hard water must be avoided.

Commenting on the application of detergents as washing agents, Dr. Flett stated that it is important to know how much sterilizing action will be obtained under the usual washing conditions. The lethal action of detergents will vary, of course, with every type of agent and organism. The biological effectiveness of the synthetic detergents is not limited to bacteria. They are effective in controlling mold, he claimed.

With regard to the properties of synthetic detergents as insecticides, Dr. Flett stated that like all insecticides, they show a remarkably powerful effect on some insects and little effect on others. The insecticidal action of the detergents would at once interest the application research men in their use for controlling the clothes moth on woolens. Results of a typical laboratory test shown by Dr. Flett pointed out that when test moth eggs on wool treated with Brewer's yeast were hatched, the

(*Turn to Page* 161)

Oil and Fat Prices Advance Sharply

Increases in fourth quarter export allocations seen as an important factor in fats and oils price rise. Soap prices also respond with upward turn.

PRICES for soap making fats and oils moved sharply upward last month in one of the most rapid and sweeping advances in the history of the industry. Toward the close of the month the extent of the advance was approximately fifty per cent, with tallow jumping from 12c in late August to 20c in late September, while coconut oil moved during the same period from 11¼c up to 15½c. Copra, quoted at $140 per ton only a few weeks ago, had moved up to $190 near the end of September. The balance of the market followed along in the upward sweep, with comparably sharp gains being reported in greases, corn oil, soybean oil, red oil, stearic acid, etc.

The reason for the advance became quickly apparent when the announcement was made early in the month that export allocations of fats and oils had been increased sharply. Allocations for the fourth quarter, as announced by the U. S. Department of Agriculture, total 452,500,000 lbs., exceeding by almost 96 million pounds the allocation for the entire first half of the year. They exceed by 276 million pounds the 1946 fourth quarter allocation. Partially offsetting the effect of the increased export commitment was the announcement that the United States would receive an increased allocation of copra. It is now estimated that total imports of copra into the United States during the full year, 1947, for use in the United States, will be over 700 million pounds.

Apparently there may well have been a leak in official channels, and word of the anticipated sharp increase in export commitments may have reached the trade before the report became public, as the sharp upward movement in fat and oil prices started about two weeks in advance of release of the fourth quarter allocation figures. The advance gathered momentum after issuance of the USDA announcement, and fat and oil prices at the close of September were once more within striking distance of the peak levels which they reached early this year, and from which they toppled in April. Thus, within a period of four or five months, fat and oil buyers have been exposed first to the sharpest drop in prices in the history of the industry, and then the sharpest advance on record,—and this during a period when the dominant force in the market has been government juggling of exports and imports.

The outlook for fat and oil production looks continually more favorable, with estimates of output for the year being revised upward as later crop reports are received. The U. S. Department of Commerce announced on September 22 that, on the basis of estimates at that date, production of fats and oils from domestic materials might reach a peacetime record of nine and a half billion pounds for the year currently ending. It was indicated further that even this high level of output might be exceeded by some 400 million pounds, if weather continues favorable.

This more favorable supply outlook was generally cited as the basis for the more liberal export allocations, but the opinion was also expressed in some quarters that perhaps an even more important factor may well have been a desire on the part of the Department of Agriculture to support farm prices and to

FOURTH QUARTER FATS EXPORT ALLOCATIONS, 1947
By Type of Product

	In millions of pounds	
Edible commercial exports:		
Shortening and edible oils, in terms of oil content	100.2	
Peanuts, in terms of oil content	86.	
Lard	74.6	
Margarine, in terms of oil content	5.2	
Total edible for commercial export		266
Inedible commercial exports:		
Soap, in terms of fat and oil content	17.1	
Drying oils	15.5	
Other inedible fats and oils	33.1	
Total inedible for commercial export		65.7
Total for commercial export		331.7
For Production and Marketing Administration procurement, for foreign relief		120.8
Total 4th Quarter Allocation		452.5

safeguard some of its own commitments to maintain those prices at parity levels. Evidence to support this view may be found in a statement made by the Department of Agriculture to the House Judiciary Committee when in May of this year an extension of import controls was being sought. An excerpt from this statement follows:

"Moreover, in direct relation to our domestic fats and oils situation, it should be kept in mind that suspension of import controls may have a serious effect on our support price programs for flaxseed, soybeans, and peanuts for the next crop year. In the absence of import controls, large quantities of oils or oilbearing materials could be brought into this country and depress our domestic markets at a time when farmers are marketing their crops. If import controls are removed during the fiscal year 1947-48, the possible loss might fall on the Government in the case of those items under price support and on the processors who had acquired the farm commodities in the case of other oilbearing materials."

With the Department thus on record as admitting its aim to use import controls to support prices for flaxseed, soybeans and peanuts, there would seem to be little reason to doubt that they would be equally willing to use IEFC allocations in the same manner. That, at least, has certainly been the result of the announcement of the huge increase in fourth quarter allocations.

Major soap companies announce 10% increase in wholesale prices.

Cost increases (in some cases as high as 71%) on raw materials the reason for the advance.

Prices had previously dropped approximately 25% during the past six months.

What the future holds in store in the way of oil and fat price movements is extremely questionable. If no controls existed, the fat and oil buyer might be able to make his own estimates of fat and oil production and demand, and could at least have some opportunity to arrive at a comprehensive and consistent purchasing policy. Under the control system, however, he has no way of predicting when some government decision may kick the market either up or down.

Conceivably, the Department of Agriculture along towards the end of the year may conclude that they have prices pushed up high enough to render the support price program secure and, in announcing the allocations for the first quarter of 1948, may cut down export allocations so drastically as to frighten holders of oils and fats supplies and the raw materials from which they are made into thinking that their inventories are not good investments due to the prospective slowing down of exports, thus precipitating a sharp drop in the market. It seems only logical to anticipate that these unpredictable upspurts and falls in the prices of oils and fats are bound to continue as long as controls continue.

AASGP Meets Jan. 28-29

THE annual meeting of the Association of American Soap & Glycerine Producers will be held at the Waldorf-Astoria, New York City, January 28th and 29th. Departing from the practice of previous years when the meeting has been simply a one day session, there will be a full two days of meetings this year and added social functions will be included—a cocktail party and buffet supper on the evening of the first day, and a banquet terminating the program on the second day of the convention.

Details of the program have not as yet been worked out but there will be talks by several government men at the business sessions, a talk by a prominent economist on the business outlook and several industry forums. A speaker of national prominence will address the annual banquet. Entertainment will be provided at the banquet by the courtesy of several of the national broadcasting companies.

GEORGE B. WRISLEY
President of Association

JAMES REILLY
Convention Chairman

James Reilly of Colgate-Palmolive-Peet Co. is acting as chairman of the convention committee. Other members of the committee include John O. Brownell of Lever Brothers Co.; R. S. Carmel of H. Kohnstamm & Co.; E. B. Hurlburt of J. B. Williams Co.; C. D. Poland of Poland Soap Works; W. G. Werner of Procter & Gamble, and M. L. Westering of Swift & Co. In his capacity as president of the Association, George Wrisley of Allen B. Wrisley Co. is also working with the convention committee as is Walter Straub of Walter Straub & Co.

CANADIAN SOAP INDUSTRY

Statistical study of soaps, washing compounds, and cleaning preparations produced in Canada

ONE of the most complete studies of the anatomy of a particular industry on a nation-wide basis is the statistical report prepared each year on the soap industry of Canada. About the only facts that cannot be gleaned from this very thorough statistical break-down are the tonnages of a particular commodity produced during the year by individual plants, figures which would be very helpful in dealing with competition, but which, naturally, are not released.

No census report for the American soap industry has been available

TABLE 1

Principal Statistics of the Soaps, Washing Compounds and Cleaning Preparations Industry, 1935-1945

Year	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			$	$	$	$
1935	104	1,931	2,490,918	367,775	8,980,703	16,002,043
1936	102	1,993	2,540,559	362,256	9,121,222	16,313,502
1937	101	2,284	2,836,208	396,694	11,253,146	19,693,888
1938	109	2,273	2,942,456	374,195	9,224,150	18,241,985
1939	110	2,406	3,142,213	376,984	9,171,373	20,145,072
1940	110	2,649	3,585,884	431,887	10,081,240	20,885,880
1941	116	3,080	4,599,815	508,558	12,633,351	25,713,565
1942	126	3,268	5,490,076	586,716	17,424,418	31,484,125
1943	134	3,220	5,853,026	661,730	16,625,211	31,491,328
1944	138	2,996	5,354,142	604,910	17,497,145	33,120,521
1945	134	3,210	5,873,994	649,525	18,366,330	37,174,244
Per cent change 1945 from 1944	...	+7.1	+9.7	+7.4	+5.0	+12.2

Note: Profits or losses cannot be calculated from above figures as data are not available for general expense items, such as interest, rent, depreciation, taxes, insurance, advertising, etc.

TABLE 2

Principal Statistics, By Sub-Groups (x), 1944 and 1945

Year	Number of plants	Average number of employees	Salaries and wages	Cost of fuel and electricity at works	Cost of materials at works	Gross selling value of products at works
			$	$	$	$
1944						
Soaps	44	2,367	4,462,854	547,030	15,919,341	29,296,250
Cleaning preparations	38	300	404,050	26,647	981,310	2,150,672
Washing compounds	56	329	487,238	31,233	596,494	1,673,599
Total	138	2,996	5,354,142	604,910	17,497,145	33,120,521
1945						
Soaps	45	2,507	4,822,098	591,639	16,423,187	32,324,548
Cleaning preparations	36	279	422,043	22,399	1,074,176	2,492,620
Washing compounds	53	424	629,853	35,487	868,967	2,357,076
Total	134	3,210	5,873,994	649,525	18,366,330	37,174,244

(x) Subdivision made on basis of principal products.

TABLE 3
Materials Used in Manufacturing, 1944 and 1945

Material	Unit of measure	1944 Quantity	1944 Cost at works	1945 Quantity	1945 Cost at works
			$		$
Acid, cresylic	lb.	192,448	18,678	168,226	20,117
Acids, fatty, all kinds	lb.	2,982,037	331,409	3,178,995	275,748
Acid, hydrochloric (muriatic), 20° Bé.	lb.	268,383	6,143	431,616	11,485
Acid, stearic	lb.	552,407	109,801	457,026	88,118
Acid, sulphuric, 66° Bé	lb.	137,117	1,733	241,738	3,917
Bentonite (Filtrol, Pembina, etc.)	tons	609	48,142	1,101	77,295
Carbon tetrachloride	lb.	4,942	385	14,644	2,133
Chalk, ground	lb.	311,641	5,805	327,956	5,735
Chalk, precipitated	lb.	359,713	5,251	423,442	5,011
Chloride of lime	lb.	1,625,729	46,189	1,895,065	48,551
Cocoanut oil	lb.	26,432,128	2,050,462	20,492,029	1,547,832
Corn oil	lb.	1,842	259	351	54
Cottonseed oil	lb.	228,492	28,217	124,009	15,919
Essential oils	...	...	480,273	...	383,422
Ethyl alcohol	proof gal.	15,328	19,076	23,844	21,639
Feldspar—Crude	tons			1,137	10,601
Ground	tons	3,389	35,423	3,410	41,806
Fish oils	lb.	6,344,904	412,574	5,834,688	340,897
Foots (cottonseed, olive, etc.)	lb.	4,072,474	231,846	4,445,238	237,538
Fuller's earth	lb.	1,181,020	35,047	750,000	24,315
Glycerine, crude	lb.	1,328,044	124,018	1,878,715	179,667
Glycerine, refined	lb.	42,198	6,954	39,439	6,558
Hydrogen	cu. ft.	5,397,231	7,575	4,110,944	6,725
Javelle concentrate or sodium hypochlorite, for dilution	...	...	30,868	...	33,498
Liquid chlorine (99% pure)	lb.	2,185,210	101,348	3,463,968	112,342
Linseed oil	Imp. gal.	154,676	130,910	108,966	89,371
Olive oil	lb.	2,118	964	1,300	1,281
Palm oil	lb.	14,753,781	897,868	27,942,657	1,619,371
Palm kernel oil	lb.	...	...	1,161	96
Peanut oil	lb.	...	...	503	94
Perfumes	...	...	392,111	...	405,048
Potassium hydroxide (caustic potash)	lb.	796,775	59,592	751,004	59,368
Rosin	lb.	7,020,519	396,023	6,856,486	496,694
Seal oil	lb.	11,150	378	22,551	2,228
Silica sand	ton	4,563	129,696	4,340	158,732
Sodium carbonate (soda ash)	lb.	15,684,594	240,801	17,946,750	270,912
Sodium hydroxide—Liquid	lb.	27,553,299	723,451	19,131,504	515,266
Flake or solid				10,061,809	301,806
Sodium chloride (common salt)	lb.	3,591,531	20,858	3,963,703	22,689
Sodium silicate (water glass) 40°	lb.	30,417,006	226,804	33,823,503	269,684
Soya bean oil	lb.	231,630	24,424	276,936	27,755
Talc	lb.	1,216,000	16,238	1,470,000	21,236
Trichlorethylene	lb.	115,525	11,416	99,122	9,231
Tallow, grease and other soap stocks	lb.	88,479,128	5,760,361	99,999,723	6,773,255
Tetrasodium pyrophosphate	lb.	2,162,828	173,119	2,725,395	217,252
Trisodium phosphate	lb.	3,034,112	129,677	3,554,559	155,900
Whale oil	lb.	1,866,796	101,833	90,843	10,435
Wax—Beeswax	lb.	110	42	328	212
Carnauba	lb.	55,998	59,620	51,223	56,763
Paraffin	lb.	50,405	3,204	40,794	2,807
Other waxes	lb.	8,734	4,415	40,343	16,968
All other materials	...	...	665,050	...	730,196
Containers, etc.	...	...	3,190,814	...	2,630,757
Total	...	...	17,497,145	...	18,366,330

since before the war, but even when such reports were issued, as they were every two years, no such detailed statistical breakdowns were provided as are contained in the Canadian soap industry report. Perhaps, now that the U. S. Census Department is preparing to resume gathering figures on American soap and detergent production, some consideration may be given to amplification of the report to furnish such data as are regular features of the Canadian survey.

The latest report on the Canadian soap industry gives figures for the year 1945. The Canadian industrial set up for soaps and specialty products is similar to that existing in the American market and a great many facts may be determined about our own industry by a careful evaluation of the Canadian statistics and their interpolation in terms of soap production in the United States.

According to the report prepared by J. J. Parchelo, statistician of metal and chemical products of the Division of Census of Industry and Merchandising, Department of Trade and Commerce, Dominion Bureau of Statistics, the report, titled "The Soaps, Washing Compounds, and Cleaning Preparations Industry in Canada,

1945" analyzes some 134 factories in Canada that make such products. Production from these works was valued at $37,174,244 in 1945 or 12 per cent more than the output in 1944. Forty-five of the plants were engaged primarily in the manufacture of soaps, fifty-three establishments made washing compounds as their main product and thirty-six made cleaning preparations such as cleaning powders, hand cleaners and drain pipe cleaners. The tables presented herein refer only to the soap, washing compounds and cleaning preparations industry, and include only the firms reporting these lines as their chief products. Small quantities of these commodities were also made by concerns which have been classified in other industrial groups in Canada, so an additional table is included that reports the total of the Canadian production.

Table 1 is an excerpt from general economic data listed under principal statistics for the industry and it shows comparison of the industry in the last years of the war and during the years 1938 and 1939 which

(*Turn to Page* 91)

TABLE 4
Products Made, 1944 and 1945

Note: Data given in this table are for the Soaps, Washing Compounds and Cleaning Preparations Industry and represent only the production of the firms classified to this group. The figure for the individual commodities do not necessarily represent the total output for Canada as these items may have been produced also by concerns which have been classified to other industrial groups.

Product	1944		1945	
	Quantity	*Selling value at works*	*Quantity*	*Selling value at works*
	Pounds	$	*Pounds*	$
Hard Soaps—				
Bar laundry and household soaps (except sold to textile mills)—				
(a) Yellow	42,254,519	3,349,292	70,196,256	5,547,128
(b) White	17,722,231	1,158,522	12,794,826	912,735
Soap chips and flakes—				
(a) In household packages	25,793,047	3,074,321	24,576,714	2,930,029
(b) In bulk (except textile and mill)	23,216,283	1,982,387	19,995,744	1,713,100
Textile and mill soaps, all forms	3,674,936	356,676	3,492,546	354,161
Toilet soaps (except liquid)	29,434,005	5,308,976	30,037,600	5,477,873
Polishing and scouring soaps	365,959	32,657	348,152	30,776
Castile soaps—				
(a) Boiled	775,566	73,233	570,441	49,317
(b) Cold process	603,551	70,647	972,393	123,975
Soap powders—				
In household packages	70,807,888	7,126,168	77,648,847	7,762,999
In bulk (except textile and mill)	5,939,762	441,984	7,159,197	547,581
Shaving soaps—				
(a) Creams (including brushless)	633,544	692,497	603,220	662,047
(b) All others	364,404	223,428	332,871	165,450
All other hard soaps	417,891	34,879	3,084,533	110,057
Liquid soaps—Toilet	2,293,918	280,471	2,665,565	309,999
Other	3,798,100	422,724	2,483,202	289,426
Soft soaps	1,484,464	122,972	2,071,593	136,725
Total Soaps	229,580,068	24,751,834	259,033,700	27,133,378
Cleaning Preparations—				
Ammonia powder	3,128,057	131,862	3,327,084	135,126
Ammonia water	...	8,765	...	5,596
Chloride of lime	389,170	31,673	478,550	45,869
Hand cleaner	1,757,026	207,585	1,623,081	252,332
Javelle water or sodium hypochlorite—				
Under 12%	...	1,422,113	...	923,951
12% and over			...	1,041,545
Lye	854,590	100,992	578,603	70,259
Sal soda	1,141,767	17,316	1,346,590	20,735
Other washing compounds	3,715,539	245,939	4,483,863	458,628
Scouring powders, pastes and cakes	15,785,605	1,065,650	20,422,326	1,439,282
Drain pipe cleaner, toilet flush, etc.	915,135	163,127	1,112,406	158,918
Other cleaning preparations—				
Household and laundry	335,234	49,499	1,113,043	141,558
Industrial and other	4,433,820	489,119	2,407,745	324,487
Glycerine, crude, sold as such (xx)	1,157,198	101,048	3,040,502	295,794
Glycerine, refined—B.P. and U.S.P. grade			7,070,370	1,020,490
Dynamite grade	12,159,620	1,758,547	4,208,629	569,291
Other grades			1,764,569	266,467
Laundry blue	17,052	2,922	14,064	2,390
Toilet preparations	...	1,805,461	...	2,247,846
All other products (x)	...	767,069	...	620,302
Total All Products	...	33,120,521	...	37,174,244

(x) Includes data for textile softeners, wax, vegetable shortening and other such miscellaneous items.
(xx) Some of the crude glycerine was sold to refiners in this industry and therefore appears again in the figures for refined glycerine.

TABLE 5
Sales of Soap By Firms in the Soaps, Washing Compounds and Cleaning Preparations Industry, 1945

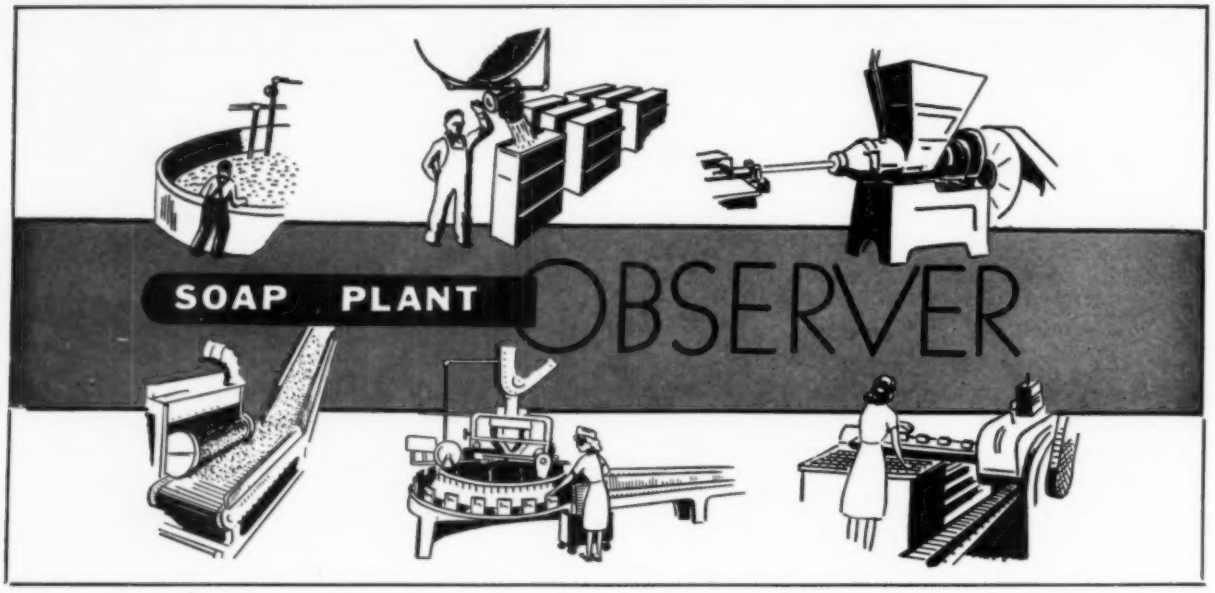
	Quantity Pounds	*Value of Sales (Final sales value)* $
Hard Soaps—		
Bar laundry and household soaps—		
(a) Yellow	71,303,048	5,829,178
(b) White	13,866,605	1,531,436
Soap chips and flakes—		
(a) In household packages	25,874,103	3,719,648
(b) In bulk (except textile)	22,497,119	1,942,590
Textile and mill soaps, all forms	3,502,603	361,496
Toilet soaps (except liquid)	30,063,941	6,045,836
Polishing and scouring soaps	4,055,415	194,452
Castile soaps—		
(a) Boiled	611,038	65,540
(b) Cold process	608,568	70,134
Soap powders—		
(a) In household packages	76,533,379	9,265,892
(b) In bulk (except textile)	6,917,965	687,755
Shaving soaps—		
(a) Creams (including brushless)	624,159	686,117
(b) All other	351,550	206,761
All other hard soap	3,798,633	151,810
Liquid soaps—Toilet	2,248,070	263,814
Other	2,649,069	363,063
Soft soaps	1,933,171	163,750
Total Soaps	267,438,441	31,549,272

TABLE 6
Total Production in Canada of Soaps, Washing Compounds, and Cleaning Preparations, 1944 and 1945

Item	1944 *Quantity* Pounds	1944 *Selling value at works* $	1945 *Quantity* Pounds	1945 *Selling value at works* $
Hard Soaps—				
Bar laundry and household soaps—				
(a) Yellow	42,254,519	3,349,292	70,196,256	5,547,128
(b) White	17,722,231	1,158,522	12,794,826	912,735
Soap chips and flakes—				
(a) In household packages	25,793,047	3,074,321	24,576,714	2,930,029
(b) In bulk (except textile and mill)	23,216,283	1,982,387	20,016,734	1,715,199
Textile and mill soaps (including soap chips and flakes (x)	3,939,411	399,256	3,492,546	354,161
Toilet soaps (except liquid)	33,325,928	6,269,611	34,798,920	6,598,127
Polishing and scouring soaps	365,959	32,657	348,152	30,776
Castile soaps—				
(a) Boiled	775,566	73,233	570,441	59,317
(b) Cold process	603,551	70,647	972,393	123,975
Soap powders—				
(a) In household packages	70,807,888	7,126,168	77,648,847	7,762,999
(b) In bulk	6,065,284	452,110	7,644,497	584,550
Shaving soaps—				
(a) Creams—Lather type	1,212,903	1,228,977	903,425	929,820
Brushless type			154,309	152,682
(b) All other	430,404	361,649	409,513	260,087
All other hard soap	2,572,401	233,522	6,022,771	252,263
Liquid soaps—Toilet	7,938,158	879,598	3,332,555	443,185
Other			3,614,805	344,335
Soft soaps	4,072,051	271,411	5,794,627	335,596
Total Soaps	241,095,584	26,963,361	273,292,331	29,336,964
Ammonia powder	4,037,458	179,389	4,556,987	198,618
Javelle water and sodium hypochlorite	...	1,460,659	...	1,967,805
Other washing compounds	...	332,717	...	560,902
Hand cleaner	1,901,332	224,643	...	261,804
Cleaning or scouring powders, pastes and cakes	17,077,137	1,207,334	...	1,461,083
Drain pipe cleaner, toilet flush, etc.	...	301,602	...	184,968
Other cleaning preparations, including lye	...	1,270,257	...	1,154,513
Sal soda	6,745,772	98,158	6,939,170	100,283
Chloride of lime	2,787,402	90,794	3,478,425	117,014
Glycerine (xx)	1,551,569	140,147	3,509,989	345,888
Glycerine, refined	12,159,620	1,758,547	13,043,568	1,856,248

(x) Includes some liquid and soft soaps. (xx) Some of the crude glycerine production was sold to refiners in this industry and appears again in the figures for refined glycerine.

Note: The above figures represent the total Canadian production of the commodities listed, regardless of the industries in which produced. Data for 1945 are subject to slight revision on further examination of the individual reports.



A SMALL soaper in the West Indies has written regarding the best formula for a "good cheap laundry soap by the semi-boil process with outline of process," and the best formula for a "good cheap toilet soap by the same process." The only information he offers is that his available oils are castor oil, coconut oil, and cottonseed oil with soda ash and silicate of soda for builders. He mentions that he is well acquainted with the full-boil method, but he believes that, in his case it requires too expensive a lay-out of equipment and too large a scale production.

The first thing that comes to mind, when one considers the oils available, is that the chances are his soap will not be "good" as compared with the quality of the standard soaps found on the market today, and moreover they may not be particularly "cheap." A fair quality laundry bar might be made from cottonseed oil, if it could be economically refined, by blending in about ten per cent coconut oil. A cheap but inferior grade laundry soap could be made from the cottonseed oil foots. Since the product is to be made by the semi-boil process, retaining the glycerine, the soap could be hardened somewhat by a larger use of sodium silicate as builder.

From the refined cottonseed oil, a "kind of" toilet soap could be made by blending in about 20 to 25 per cent coconut oil. Such a product is not recommended, but it is about the best that could be done with the oils on hand. The cottonseed oil would need careful refining in order to minimize rancidity and other deterioration of the soap bar.

LAUNDRY SOAP	*Pounds*
Cotton seed oil	630
Coconut oil	70
Caustic soda lye (34° Bé)	360
Sodium silicate (about 50° Bé)	200
Soda ash (dry)	50
	1310

TOILET SOAP	*Pounds*
Cottonseed oil	525
Coconut oil	175
Caustic soda lye (34° Bé)	375
"Sopanox," "SA326" or other anti-oxidant, approximately	4
and/or sodium silicate (50° Bé)	7
	1086

There is doubt that later discoloration and spotting could be avoided. A good preservative is necessary. Your observer has found "Sopanox" and "SA326," products of Monsanto Chemical Co., St. Louis, to be useful. The use of about 0.5 per cent to 1 per cent of sodium silicate, on the basis of the soap in the crutcher, would be worth trying. There appears to your observer no way of making use of the castor oil for the products desired. If it is possible to import some good grade of bleached palm oil or tallow the problem of formulation would be simplified. In the United States, the amount of coconut oil in ordinary laundry or toilet soaps seldom runs over 15 per cent. Under the circumstances of our study, larger percentages may be justified.

If one figures the percentage of sodium hydroxide necessary to saponify coconut oil as about 17.9 to 18.8 per cent and to saponify cottonseed oil as about 13.6 to 14 per cent, formulas may be set up for both the laundry and the toilet soap as indicated in the box.

These soaps will be low in titer and quite soluble. They should give a quick abundant lather even in cool water, but the lather will not be long lasting. They will tend toward early rancidity. In color, they will run from buff to a light tan depending on the quality of the oil stocks. The toilet soaps should be mild in action toward the skin. They will require more than usual amount of perfume. Bleached palm oil, which may be available now in the West Indies area, would be a very satisfactory substitute for some of the cottonseed oil, boosting the titer, making the soaps harder and a little less soluble.

SINCE our soaper has requested semi-boil process instruction, we may assume that he has a crutcher. A crutcher to handle this rather heavy-duty work should have a working capacity of about 1,200 lbs. and be equipped with a quick-opening gate

valve, preferably of the sliding type. Piping should be arranged so that cold water as well as steam can be introduced into the outer jacket, which should be tested for at least 100 pounds hydrostatic pressure. The motor should should be at least five horsepower and the central agitator should revolve at about 300 rpm. The crutcher should be installed so that about a foot of it remains above the floor level, the remainder being on the floor below. Rigid installation is necessary and a concrete bed is highly desirable.

The oils are piped to the crutcher and warmed to about 130 to 140° F. As the oils are agitated, the lye is slowly piped in and when it is thoroughly admixed the temperature is slowly increased by use of steam in the jackets of the crutcher. These oils saponify very quickly and great care should be used to prevent the temperature from going over 180° F. and the reaction getting out of hand. The batch at first will be rather grainy and sandy in appearance and then gradually become more plastic as the reaction sets in. It is well to stop the agitation at this point and allow the mixture to stand for 15 to 20 minutes. When the crutcher is started again the soap will be quite hot and molten in appearance. After crutching for five minutes or so it will smooth out to a creamy appearance. At this point, the alkalinity of the soap can be adjusted, if necessary, by the addition of 8° to 10° Baumé lye or of coconut oil. The soda ash may then be added at this point and, as the crutching is continued to distribute the dry powder evenly in the molten soap, the silicate of soda solution is added, followed finally by the preservative. When the materials have combined into a homogeneous mass, the soap is ready for the frames. It is desirable to reduce the temperature until the mixture will just discharge from the crutcher without sticking. Finally the batch is run into the frames and hand-crutched a little to prevent the formation of streaks.

The 600-pound capacity frames are desirable for small operators and three of them will handle one crutcher of a semi-boil soap. The use of a paper lining that can be purchased ready-made to fit these frames is recommended for framing these hot, semi-boil process soaps.

The "silk purse from a sow's ear" way of processing is usually not economical for the small soaper

The soaps, once slabbed and cut into cakes, will run about 25 per cent moisture. It may be desirable to increase the moisture content of the laundry bar by using a 30° or 32° Baumé lye, for a considerable amount of moisture will be taken up chemically by the builders, causing the bar to be firmer.

PROCEDURE for the toilet soap is essentially the same except that no soda ash is used. The perfume is added as the soap cools in the crutcher just before framing. Reversing the crutcher, so as to incorporate air into the soap once saponification has taken place, will give a bulkier product which should float. However, it would be well to experiment carefully with a floating soap for fear that faster oxidation and deterioration of the bars might be the result.

It is judged from our soaper's desire to steer clear of expensive equipment that he does not intend to mill the toilet soap. A bar of toilet soap that is not milled may be "cheap" but it is seldom "good." If a dryer and milling equipment are available, the toilet soap product will be of higher quality. The soap can be cooled in the crutcher until it will just flow and then passed to the chilling roll and through the dryer, a temperating hopper, amalgamator (where the perfume should be added to a milled soap) and thence to the mills, plodders and press. If no dryer is available, but it is intended to mill the material, the crutched soap may be sent over a chilling roll and flaked, or the slabs of framed soap may be chipped or flaked and spread out to dry. If the humidity is not too great and the soap is turned over occasionally with a rake or hoe, it will be sufficiently dry for milling in about 24 hours.

A fair grade of soap powder or flake can be made from this laundry soap. Without going into detail on this point, it can be said that if bleached palm oil can be substituted for about half of the cottonseed oil, and if the Baumé of the caustic soda is sufficiently high, the molten soap from the crutcher can be slowly passed over a chilling roll equipped with flaking needles or over a water-cooled mill. The dissolved soda ash, which is suddenly chilled will crystallize in such a way as to take up considerable water of crystallization, allowing the product when cool and dry to be pulverized in a hammer mill.

In closing it should be emphasized that the formulas are approximate and for the best results, care should be taken to avoid excess caustic lye or unsaponified fat. It would be best, and not too expensive, to have a set-up by which the saponification values of the oil batches could be checked and the proper lye requirement frequently determined, especially when dealing with a new shipment of oil. This procedure was outlined in this column in the July issue of *Soap & Sanitary Chemicals*.

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Antioxidants have been compared in terms of the oxidation rate of bone grease containing the agents at room temperature. The method of determination was by measuring the peroxide content of the treated grease. Protection values for 59-69 days' storage calculated from the Lea number of the untreated fat divided by the Lea number of inhibited fat were:

p.p.m. of Protective Agent		*Protective Value*
1000	tetrasodium pyrophosphate	19.0
1000	phosphoric acid	11.6
200	hydroquinone	10.0
1000	hydroquinone	44.9
200	pyrogallol	14.2
1000	pyrogallol	44.9
3	adrenaline	15.6
300	pyruvic acid	0.7

K. Vas, *Muegyetemi Kozlemenyed 1947*, No. 1, 79-87; through Chem. Abs.

TRADE NEWS. . . .

Straka Rejoins Colgate

J. A. Straka has rejoined the Colgate-Palmolive-Peet Company, Jersey City, as vice-president and general

J. A. STRAKA

manager of the toilet articles department. He had been executive vice-president with Yardley of London, Inc.

Mr. Straka first joined the company 23 years ago. In 1931 he was assigned to the Colgate foreign department and served as general manager in Poland. At the outbreak of war, Mr. Straka returned to the United States and was appointed general manager of the Kirkman division. He advanced to the position of assistant to the president of Colgate-Palmolive-Peet Company in 1943. The following year, he was elected vice-president.

FTC Denies Fitch Motion

The Federal Trade Commission recently denied the motion of F. W. Fitch Co., New York, to recall its recent complaint against the company on a charge of misleading advertising of shampoos and hair tonics. The Fitch company's motion was based on the statement that the conditions complained of were general in the shampoo and hair tonic industry and it requested FTC to make a study on an industry-wide basis, or to serve like complaints against all competitors, and try the case on an industry-wide basis. The commsision, in denying the motion, stated that such an industry-wide procedure would be impractical and confusing because the facts in the case of each advertiser are different. The commission pointed out that in the last fifteen years some 360 cases of this kind have been brought up and that for this reason an industry-wide investigation did not seem to be necessary.

Klem Chemical to Expand

Klem Chemical Works, recently incorporated under a new name, Klem Chemicals Inc., Dearborn, Mich., has announced a plan of plant expansion which is expected to double the present production capacity of the firm. Expansion plans call for additional offices for distributing the company's line of metal treating chemicals in larger manufacturing centers.

Paul Mayer Dies

Paul M. E. Mayer, sixty-two, president of Mem Co., and Marton Freres, New York, manufacturers of soap and toilet goods preparations, died September 14th in Geneva, Switzerland, where he had been visiting the Mem soap factory and two retail stores in Vienna. Mr. Mayer joined the Mem Co. in 1912 in Vienna and came to the United States in 1940. He was a member of the Toilet Goods Association, New York.

New Fox Chemical Plant

Fox Chemical Service, manufacturers of detergents and heavy chemicals, Hyattsville, Md., is completing construction of a new plant for compounding industrial detergents on the Baltimore & Ohio Railway at Hyattsville. Fox Chemical also has a plant at Silver Hill, Md.

Watson Joins Fleuroma

Rupert C. Watson has joined Fleuroma, Inc., New York as sales manager for the company's full line

RUPERT C. WATSON

of perfume specialty oils, aromatic chemicals and essential oils.

Mr. Watson brings with him to his new connection a background of more than 20 years of sales administration and advertising experience in the essential oil and allied industries. Beginning his career in 1924 with *Drug and Chemical Markets*, Mr. Watson was successively with the *Oil, Paint and Drug Reporter;* Ungerer and Company as salesman and sales manager; and most recently and for the past 12 years as American resident partner and managing director of Firmenich and Co., New York.

At Fleuroma, Inc., Mr. Watson is associated with Walter Lengsfelder and E. Poons, president and treasurer respectively of the organization.

Luckman Heads Food Com.

Charles Luckman, president of Lever Bros. Co., was named by Pres. Truman last month to head a citizens food committee charged with the task of organizing a program to prevent waste of food.

Barnes Retires from P & G— Knowles & Pleasants Advance

FLOYD M. BARNES, vice-president in charge of purchases for Procter and Gamble Co., Cincinnati, retired from active service on September 1st. He will remain with the company as vice-president, acting in an advisory capacity. His place is being taken by Harvey C. Knowles, at present vice-president in charge of manufacture and a member of the board of directors. Mr. Barnes joined Procter and Gamble in 1899. He became manager of the general buying department in 1920 and vice-president in charge of purchases in 1931. In 1934 he became a member of the board of directors.

F. BARNES

H. KNOWLES

J. PLEASANTS

Mr. Knowles became associated with the company in 1921 as assistant to the general superintendent of manufacture, finally moving up to the position of vice-president in charge of manufacture, and a director of the company in 1942. He has been closely associated with both manufacturing and technical phases of the business and was largely responsible for the design and construction of eleven plants during the past fifteen years. During the war, in addition to his other duties, Mr. Knowles was in charge of two shell-loading plants which the company operated for the government.

The announcement also stated that Dr. John G. Pleasants, formerly manager of technical divisions, will become director of manufacture in charge of all manufacturing and technical activities of the company. Dr. Pleasants joined Procter and Gamble in 1933 and has served in production as a superintendent at the Port Ivory, N. Y., and Baltimore plants, and as western division manufacturing superintendent, being appointed manager of technical divisions in 1946.

Franklin Smith Dies

Franklin Stoddart Smith, retired soap manufacturer, died, Sept. 6th, at his home in Montclair, N. J., at the age of 85. Mr. Smith retired ten years ago from the presidency of Holbrook Mfg. Co., makers of castile soap. The firm was founded in 1880 by his father, the late G. R. K. Smith.

Chemo Puro Moves

Chemo Puro Mfg. Corp., Long Island City, moved during September to a 4-story building at 26-32 Skillman Ave., according to an announcement by P. C. Hereld, sales manager. The move incorporates plant, office, shipping and packing facilities under one roof.

Colgate Markets "Coleo"

A new denture cleanser known as "Coleo" is being placed on the market on a nation-wide scale by Colgate-Palmolive-Peet, Jersey City. Available in three sizes, retailing at 25 cents, 49 cents, and 73 cents, the new product is said to have a potential market of eighteen million users. In pre-introduction store and consumer tests, Coleo is reported to have topped any other product launched by C-P-P.

New Lever Wage Rise

New agreements providing for pay equalization on a national basis without regard to local area differentials and for an overall average increase of 12½ cents an hour were announced in September by Lever Bros. Co., Cambridge, Mass., effective for some three thousand production workers in five Lever plants. All contracts expire on March 14, 1948. This marks the third hourly increase for Lever Bros. production employees in the past eighteen months. An interesting feature of the new agreements is the inclusion of a no-strike clause outlawing unauthorized stoppages. A new CIO contract provides, in addition, that in the event of wildcat stoppages, the unions will order their employees back to work regardless of picket lines, and further, the union shall not question the "unqualified right of the company to discipline or discharge employees engaging or participating in such actions."

Another feature is the provision for three-weeks vacations for fifteen-year employees.

NY BIMS End Golf Season

The final golf tournament of BIMS, New York took place September 9th at Plandome Country Club, Plandome, L. I. It may have been the last meeting of this organization at Plandome for the property has been sold. Prizes, presented by Martin F. Schultes, chairman, were awarded to the following: grand prize, Louis Bezard, Parfums Schiaparelli; low gross, Paul Miller, Golden Fleece Corp.; low net, Wallace Nuckols, Swindell Bros.; second low gross, Ralph Stevenson, Givaudan-Delawanna; second low net, Walter Jamieson, Wallace Paper Box Co.; and low net for guests, J. R. Sims, Kimble Glass Co.

Soap for Automatic Washers

Essential Chemicals Co., 744 N. 4th st., Milwaukee 3, has introduced a new soap, "Fun," for use in automatic washers. The product is adapted to the hardest water, and requires no water softener, the company claims.

SEARCHING FOR THAT

"COME HITHER" NOTE?

depend on Du Pont

TRY

ISO AMYL BENZYL ETHER

Perfumer — soapmaker — flavorer — you'll all want to know about Iso Amyl Benzyl Ether, intriguing new nuance.

Its odor suggests Amyl Salicylate with a fruity, mushroomy side note. A high boiling ether, it is colorless . . . combined with para cresol, geraniol, terpineol and their esters, it is an excellent soap base.

Iso Amyl Benzyl Ether has been successfully used with cananga, oakmoss, sage, bergamot, and anisic aldehyde in the creation of new mown hay, clover, chypre, gardenia, and fruity bouquets of blackberry and raspberry types.

Your product may need Iso Amyl Benzyl Ether. You may want technical advice. Whatever the product, whatever the fragrance, see Du Pont early! E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Aromatics Section, Wilmington 98, Delaware. Branch Offices: Atlanta, Boston, Charlotte, Chicago, New York, Philadelphia, Providence, San Francisco.

Du Pont Aromatics

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

DU PONT

REG. U.S. PAT. OFF.

Attasol—an adsorbent mineral which gives stable colloidal suspensions, even in the presence of electrolytes—is finally available to industry. It is produced from the mineral attapulgite, which is classified as hydrous aluminum magnesium silicate.

Attasol displays the following characteristics, most of which are unique when compared with generally similar materials:

1 It is a naturally active adsorbent—of extreme value in removing impurities, cleaning and in reclaiming used materials.

2 Aqueous suspensions of Attasol gel rapidly on standing but revert to fluid condition immediately upon agitation.

3 When relatively small amounts of Attasol are well mixed with water, a rapid increase in viscosity takes place.

4 Attasol does not flocculate in the presence of electrolytes.

5 It wets very readily.

6 Attasol has a low bulk density—approximately 30 lbs./cu. ft.

Attasol's unusual properties open almost limitless possibilities for industrial use. It may provide answers for some of *your* problems. We'll be glad to send you a generous sample and cooperate in every way.

ATTAPULGUS CLAY COMPANY

Dept. H, West Washington Square, Philadelphia 5, Penna.

Winans Joins Colgate

Clifford Winans joined Colgate-Palmolive-Peet Co., Jersey City, during September, to work with D. D. Pearce in the company's syndicate store sales department. Mr. Winans, who has been in the syndicate store field for more than twenty years, started with F. W. Woolworth Co. in 1924. Later he served with S. H. Kress & Co. and joined Don Juan Co. in 1938 as director of syndicate store sales, where he remained until he joined Colgate.

Mrs. Edlund Dies

Mrs. Emma Anderson Edlund, mother of Roscoe C. Edlund, manager of the Association of American Soap and Glycerine Producers, New York, died August 23rd in Brooklyn at the age of 89. She is survived by Roscoe; another son, Sydney W. Edlund, of Riverside, Conn.; a sister, Mrs. Matilda Robinson of Riverside; and two brothers and a sister in Sweden.

Omer Herrmann Appointed

Dr. Omer W. Herrmann, director of the fats and oils branch, Production and Marketing Administration, USDA, since July 1946, was appointed, in September, assistant administrator, Agricultural Research Administration by Secretary of Agriculture Clinton Anderson. Dr. Herrmann's new duties will be the coordination of research on utilization and marketing which is being greatly expanded under the Research and Marketing Act. He will also assist the chief of the office of experiment stations in coordinating marketing research of the state experiment stations with that of the department. During the war, Colonel Herrmann served on General Eisenhower's staff as chief of the food and agricultural section of SHAEF.

Soda Ash Outlook Better

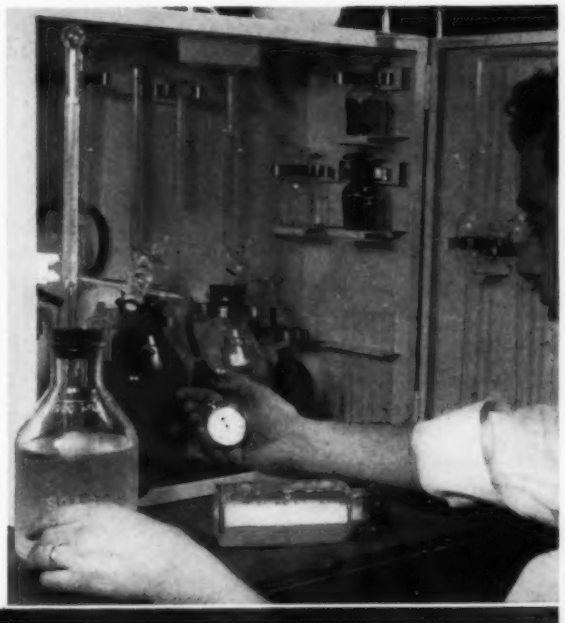
Although the supply of soda ash is stil slhort, prospects for the near future look good according to a report recently distributed by the Association of American Soap and Glycerine Producers, New York. According to the report, demand still exceeds supply but production is increasing steadily. Natural ash is growing in importance but manufactured ash is still by far the biggest source. Chances are that there will be no closing of chemical or other manufacturing plants this year due to the lack of soda ash supplies. The production of both manufactured and natural soda ash is steadily rising. Recently William B. Thom, president of Westvaco Chlorine Products Corp., New York, disclosed plans for relatively large pilot plant operations at the new soda ash "lode" at Westvaco, Wyo. Full-scale operations are expected there by January 1949.

Forms Medal Committee

Dr. Emil G. Klarmann, Lehn & Fink, Inc., Bloomfield, N. J. and president of the Society of Cosmetic Chemists, announced September 19th the formation of a "medal committee" whose duty is to designate that member of the society who, in its opinion, has made the most outstanding contribution to cosmetic chemistry and technology. Dr. Curt P. Wimmer is chairman of the medal committee. The first award is to be made at the annual dinner of the society to be held December 3, Biltmore Hotel, New York.

Foster Dee Snell, Inc., Holds Open House

Testing water hardness (right) and the strength of soap films (below) are necessary in support of research projects on detergents and metal cleaners, part of the work of Foster D. Snell, Inc., now located in their new laboratory at 29 West 15th St., New York. At a recent inspection tour for the press, Dr. Snell stated that 38 van loads of equipment were moved into ten floors offering 22 000 square feet of space. During the shift, no department except bacteriology, was shut down as much as a week.



Detergents Discussed

The position of detergents in competition with soap in today's market is discussed in a two-column article titled, "No Soap," appearing in the "Shorts and Faces" department of October *Fortune*. *Fortune* sums up for its readers most of the information on detergents well-known to the trade, mentioning that last year, as against some two and one-half billion pounds of soap, 125 million pounds of synthetic detergents were produced in the United States, and that this year's production is expected to reach 300 million pounds. Indicative of the potential use of synthetic detergents in the United States is the fact that some 60 per cent of the population (including most of the mid-west) uses hard water in which the synthetic detergents are more efficient than soap. The article mentioned a few new uses for this type of detergent, namely, the cleaning of streets and building exteriors, and the washing of vegetables (unlike soap many detergents are tasteless). With volume production and costs under control, synthetic detergents could presumably hold out against soap even if the prices of fats and oils went to the bottom, claims the article.

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Oil Chemists to Meet

Several papers of interest to the soap industry will be featured at the 21st fall meeting of the American Oil Chemists' Society to be held October 20-22, 1947, at the Edgewater Beach Hotel, Chicago. The papers are part of several symposia on such subjects as soap and glycerine, drying oils, reversion, stability, oxidation and antioxidants, and processing methods, in addition to general papers on fats and oils.

R. T. Milner, Northern Regional Research Lab., Peoria, Ill., president of the association, will call the meeting to order on Monday morning, and G. A. Crapple, Wilson & Co., Chicago, will welcome members and guests.

The symposium on soap and glycerine will be held on Monday morning, and will be under the direction of Dr. Milner. Papers of interest to the soap industry are: "Relationship Between Nickel Content of Soap and Conversion to Polymer in GR-S Manufacture," by B. A. Brice, Margaret L. Swain, C. O. Willits, and W. C. Ault; "Effect of Sodium Carboxymethylcellulose on Detergency of Synthetic Detergents," Thomas Vaughn, Wyandotte Chemicals Corp., Wyandotte, Mich.; "Potentiometric Method for Determination of Acid, Saponification, and Rosin Acid Values of Tall Oil," by Chester A. Snell, Foster Dee Snell, Inc., New York; "Report of an American Representative on Fat and Oil Commission of International Union of Pure and Applied Chemistry," by Foster Dee Snell, Foster Dee Snell, Inc., New York. Two papers of the fatty materials symposium of interest to soapers are: "Continuous Fat Splitting Plants Using the Colgate-Emery Process," H. L. Barneby and A. C. Brown, and "Changes in Composition of the Fatty Phase During Twitchell Splitting of Coconut Oil," by H. H. Mueller and E. K. Holt.

Featured at the meeting will be displays by over twenty-five industries serving the fats, oils, and soap industry.

E. H. Little, president of Colgate-Palmolive - Peet Co., Jersey City, receives on behalf of the company the National Safety Council's Award of Honor for distinguished service to safety during 1946 from the Council president, Ned H. Dearborn. Last year, Colgate had fewer lost-time accidents than in any year in the company's history.

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Textile Chemists Meet

American Association of Textile Chemists and Colorists, will meet at the Congress Hotel, Chicago, October 23 to 25, 1947.

Pictured here is a meeting of the directors and officers of Polak & Schwartz Co., New York and affiliated houses throughout the world who assembled in Zaandam, Holland, September 5th, for their first post-war conference. New policies were decided upon, taking into consideration various trade requirements in different countries.

Soaps at Toiletries Show

THE fifth annual toilet goods show of the Chicago Associated Toiletries Salesmen, held at the Palmer House, Chicago, Sept. 7 to 13, revealed that many familiar brands of soap, long off the market because of war conditions, are now back again. Among the 85 exhibits only a few new products were shown, but it was noticeable that many old lines have been dressed up in new containers and new packages.

Allen B. Wrisley Co., Chicago, displayed their "'Blue Fern" toiletries in a new package, which, incidentally, had won a Chicago Society of Typographic Arts award for superior excellence of design. Also shown in new packages were four soaps for complexion, bath and toilet use and visitors were told of the company's national advertising campaign in support of "bulk" soap sales, in dozen lots by department stores. In charge were Lee A. Becker, N. W. Godbout, A. R. Kaplan and Paul Litkowski.

Hewitt Soap Co., Dayton, O., announced return of its boxed "Omnibus" and its cellophane packaged "Pall Mall" toilet soaps, while other products also were newly packaged to enhance consumer appeal. Displayed with the toilet items were also Hewitt's white milled laundry flake soap, "Dawn," and other products featured for drug, department and variety store distribution. In charge was A. L. Iams, sales supervisor, and Paul V. Trenkmann.

Lightfoot, Schultz Co., New York, showed several new designs in its line of sculptured soap novelties, but stressed its "Avaderma" soap for feminine dry skins and its "Royal Oak" group of men's toiletries. Jay Salaman and Marshall B. Houck in charge.

Ferd Mulhen's, Inc., New York, presented a new "Sir" line of toilet soaps for men and announced that its "White Rose" transparent glycerine soap is "back again." Also shown was "4711," along with bath soaps, bath salts and other items. M. B. Simpson and Dick Meier in charge.

Roger & Gallet, New York, presented newly packaged combinations of hand wrapped toilet, bath and guest soaps in various fragrances and a shaving soap in wooden bowl. J. J. Spence, in charge of sales, recalled that the company's products, now made in its own New York factory, originated in Paris in 1806.

Alfred D. McKelvy Co., New York, showed a new brushless shaving cream, along with its regular line of "Seaforth" toiletries for men. Also shown was a new travel kit packaged in a non-leak and non-breakable plastic container in colors similar to those in the regular stoneware jugs, but weighing only one-third as much. H. Robert Marschalk, sales manager, in charge, assisted by Roger K. Taylor and John D. Wilson, Jr.

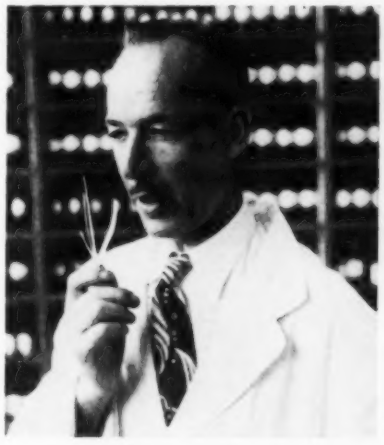
The House For Men, Inc., Chicago, featured new plastic containers for after shave items and announced availability again of its "His" toilet soaps in slightly reduced sizes, packaged to sell at pre-war retail prices. Salesmen on duty included Chas. Cameron, George Full, Joe Karl, Fred Stinson, and Howard V. Wells.

Trylon Products Corp., New York, featured bubble bath tablets and also showed a new dog shampoo incorporating 5 per cent DDT, and "d'ir-kleen," a soapless cleaner for dresses, drapes, scarfs, ties, hats, suits, upholstery and rugs. O. A. Barke in charge of sales.

Lanchere, Inc., New York, represented by John J. Tracey, had on display a new "Shamrock" series of toilet soaps in three scents. Also shown were bubble bath tablets, shampoos, and other toilet items.

Exhibitors of perfumes and kindred toilet items, who also carried soaps in their lines, were numerous, among them being Mary Dunhill, Inc., Alfred Dunhill, Inc., Alfred Dunhill Men's Toiletries, Ltd., Solon Palmer, Houbigant-Cheramy, Elmer J. Engel Co., Hudnut Sales Co., Lentheric, Inc., and others.

Although the number of exhibitors was limited by hotel space restrictions, registration for the Chicago affair approached last year's record crowd and officials of the Toiletries Salesmen's Association reported a satisfactory volume of new business written.



ROY J. HUTTLESTON

Schimmel Names Huttleston

Schimmel & Co., Inc., New York, announced in September the appointment of Roy J. Huttleston, perfume chemist, to the staff of its perfume laboratory. He will also act as aide to the sales staff, providing technical service and assistance to customers. Mr. Huttleston came to Schimmel from Cincinnati where for many years he was perfume chemist with Procter and Gamble, previous to which he was with the Palmolive Co. in a similar capacity.

Household Bleach

Containing a wetting agent called "QET" stable in a highly chlorinated solution, a new household bleaching solution has been developed by Chlorine Solutions Inc., Los Angeles. The new solution is said to be faster acting than older bleaches.

Premium With "Oliv-ilO"

Allen B. Wrisley Co., Chicago, is promoting sales of "Oliv-ilO" toilet soap with an offer of a plastic hair brush for three wrappers and 35 cents.

Soap Products from Coffee

A soap powder and household cleanser developed from the oils found in substandard and contaminated coffee is being distributed in the New York area by Coffette Products, Inc., Brooklyn. At a later date, "Coffette" hand soap and shampoo will be introduced, according to Robert Brown, president of the firm and inventor of the process. The basic ingredients in the preparations are oils which comprise 30% to 40% of the composition of coffee (according to Mr. Brown), other glycerized materials and tannin acids. The unsaponifiable material remaining after treating the coffee oils with alkali to make the soap is said to be advantageous in protecting the hands. The soap makes a heavy lather and is said to have some bleaching action. Free of odor itself, the "coffee soap" can actually deodorize foreign odors, according to the company.

The household cleanser is claimed to have both detergent and a polishing action, the coffee fibers being used as the abrasive. The soap powder, "Coffette Suds" and the "Coffette Household Cleanser" will retail for about 35 cents, packaged in shaker containers holding about twelve ounces.

Du Bois Co. Expands

Expansion and improvements to the plant and offices of DuBois Co., Cincinnati, manufacturers and distributors of industrial and institutional processing, de-greasing, and cleansing compounds, which will increase the capacity of the Cincinnati plant are now under construction. Improvements include modernization of the power supply by adding a new boiler plant to replace the present boilers. The new boilers will be full automatic, coal-stoker fired. Accessories will include a water treating unit.

New soap oil storage tanks of 20,000 gallons capacity each will be installed. Other changes being made in the production facilities include relocating four lye tanks, installing new piping, installing new oil pumps and new air compressors for process work. Office space will be enlarged.

To make room for these additions and to provide storage and shipping facilities, floor space will be increased by additions of new buildings to the present plant, construction being of steel and brick with concrete floors and build-up roof on pre-cast slabs. Shipping facilities will be increased by erecting a new covered loading dock, thereby doubling the number of cars that can be accommodated. Elevator facilities will also be increased and a modern conveyor system installed.

Fitch Has Cream Shampoo

F. W. Fitch Co., Chicago, is reported to be introducing its new cream shampoo with a $35,000 prize contest which began October 5th. The new cream shampoo retails at 79 cents for the 4-ounce jar and $2.39 for 16 ounces.

Malmstrom Expands

N. I. Malmstrom & Co., Brooklyn, announced in September increased production of lanolin, wool greases and absorption bases. The facilities of the Chicago office also have been enlarged by a move into new quarters at 444 West Grand Avenue, Chicago 10, Ill. Stephen T. Goode continues in charge of Malmstrom's Chicago office.

To Read Detergent Paper

A paper titled, "Evaluation of Ternary Mixtures: Synthetic Detergent-Soap-Builder," will be presented by J. J. Morrisroe and R. G. Newhall, Oronite Chemical Co., San Francisco, at the meeting of the analytical division, American Chemical Society, being held concurrently with the 1947 Pacific Chemical Exposition in San Francisco's Civic Auditorium October 21-25. The authors have investigated these ternary mixtures in hard water and found areas of high detergency with high and low foaming as well as low foaming, low detergency areas. They will discuss the methods used.

Lever Appoints Moser

John P. Moser, formerly with the technical staff of Lever Bros. Co., Cambridge, Mass., was named general manager of Harriet Hubbard Ayer, Inc., New York, early in September. The latter company was recently acquired by Lever Bros., and is being operated as an independent unit.

Yardley Enlarges Plant

Yardley, Ltd., Toronto, is erecting a $100,000 extension to its harbor-front plant in Toronto, which will substantially increase its present production of soaps, toiletries, and cosmetics.

"All," distributed by Detergents, Inc., Columbus, is a synthetic detergent product put up particularly for use with the automatic washing machines in a 24 ounce blue and yellow carton and in 100 pound bags for volume use. The product is the well-known "Sterox" developed by Monsanto Chemical Co., St. Louis, and was tested by Westinghouse Electric, appliance division. Its feature is that it is not high-sudsing and messy overflow of suds can be avoided.

NEW TRADE MARKS

The following trade-marks were published in the September issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

RESTORZIT—This in upper case, extra bold, black, italic letters for dry cleaning fluid. Filed June 12, 1946 by Maurice Miller, Pottstown, Pa. Claims use since May 30, 1946.

GOSSIP—This in upper case, bold, open letters above the quoted words, "Out Comes the Dirt" for household cleanser. Filed Sept. 6, 1946 by Mineral Cleansers Co., New York. Claims use since May 21, 1941.

FLIK-O—This in lower case, open letters for household cleaning preparation. Filed Sept. 13, 1946 by Emkay Chemical Co., Elizabeth, N. J. Claims use since Apr. 1, 1946.

I No.:.U No—This in upper case, large and small letters for soap in bar and powdered forms. Filed Oct. 31, 1946 by Lee E. Logan, Edgemont, S. Dak. Claims use since Aug. 13, 1946.

PENCO—This in upper case, extra bold, black letters for insecticides. Filed Nov. 10, 1945 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since Mar. 19, 1945.

RAT BUTR—This in upper case, extra bold letters one word above the other for rodenticide. Filed Nov. 13, 1946 by Oneida Chemical Co., Utica, N. Y. Claims use since Nov., 1936.

COBTOX—This in upper case, bold letters for insecticides. Filed Nov. 15, 1946 by R. A. Cobb, Houston, Tex. Claims use since Nov. 7, 1946.

CLAVANOL—This in upper case, extra bold, black letters for wetting agents. Filed Feb. 28, 1947 by Dexter Chemical Corp., New York. Claims use since May, 1946.

CLAVODENE—This in upper case, bold letters for wetting agents. Filed Feb. 28, 1947 by Dexter Chemical Corp., New York. Claims use since May, 1946.

"EXTANE"—This in upper case, extra bold letters for insecticide. Filed Apr. 7, 1947 by Cook Chemical Co., Kansas City, Mo. Claims use since Mar. 3, 1947.

MERRYMAID—This in upper case, bold letters for moth crystals. Filed Apr. 9, 1947 by Interchemical Corp., New York. Claims use since Dec. 23, 1946.

HETP—This in upper case, extra bold, black letters for insecticides. Filed May 21, 1947 by John Powell & Co., New York. Claims use since Mar. 31, 1947.

C-500—This in upper case, open letter and numerals for insecticides. Filed June 2, 1947 by Central Paint & Varnish Works, Inc., New York. Claims use since Jan. 15, 1947.

IN-SEC-TOL—This in upper case, bold letters for insecticides. Filed June 20, 1947 by J. W. Quinn Drug Co., Greenwood, Miss. Claims use since Apr., 1919.

STANDOLIND—This in upper case, bold, stencil letters for insecticides. Filel June 28, 1947 by Standard Oil Co., Whiting, Ind. Claims used since Nov. 19, 1936.

SQUEEK—This in upper case, bold, italic letters above the drawing of a hand holding aloft a drinking glass for detergent compounds. Filed Nov. 13, 1945 by Finger Lakes Chemical Co., Ithaca, N. Y. Claims use since June 29, 1940.

NUSHAVE—This in upper case, extra bold, black letters for liquid shave cream. Filed May 8, 1946 by Andrew Jergens Co., Cincinnati. Claims use since Apr. 3, 1946.

BABY LAMB—This in upper and lower case, extra bold, black, script letters for liquid white shoe cleaners. Filed May 20, 1946 by Vitalex Products Co., Philadelphia. Claims use since Oct. 27, 1944.

ICEGLO—This in upper and lower case, extra black bold, italic letters for brushless shaving cream. Filed July 17, 1946 by Noxema Chemical Co., Baltimore. Claims use since about Oct., 1932.

FEATHER BATH — This in upper case, bold letters for powdered dish washing preparation that has a cosmetic added. Filed by Sept. 16, 1946 by Soil-Off Manufacturing Co., Glendale, Calif. Claims use since July 1, 1946.

DUNX—This in upper and lower case, extra bold, black, italic letters for synthetic detergent. Filed Sept. 17, 1946 by K. C. Working Chemical Co., Los Angeles. Claims use since Aug. 13, 1946.

TP—This in upper case, bold reverse letters on a rounded-corner rectangular background for spot removing preparation. Filed Sept. 19, 1946 by Thermocor Products, Inc., Erlanger, Ky. Claims use since Aug. 21, 1946.

"DUNK"—This in upper case, bold letters for wool detergent. Filed Oct. 22, 1946 by Botany Worsted Mills, Passaic, N. J. Claims use since Sept. 9, 1946.

RED FEATHER—This in upper case letters above a feather for type and platen cleaner. Filed Nov. 2, 1946 by Red Feather Products Ltd., Redwood City, Calif. Claims use since July 1, 1932.

BEL-WAY—This in upper and lower case, extra bold, script letters for cleaning fluid for carpets and rugs. Filed Nov. 8, 1946 by Bel-Way Cleaners, Brooklyn. Claims use since Oct. 9, 1946.

STAX—This in upper case, extra bold letters beneath the word "concentrated" and above the words "super soap formula" and superimposed on a background of bubbles, to the right of which appear the fanciful drawing of a woman and a washing machine. Filed Nov. 15, 1946 by King Research, Inc., Brooklyn. Claims use since Apr. 12, 1945.

DAYLEN—This in upper case, bold letters for washing powder. Filed Nov. 19, 1946 by Daylen Co., Springfield, Mass. Claims use since Oct. 4, 1946.

WHISK—This in upper case, extra bold, oversize letters for cleanser for general washing purposes. Filed Apr. 17, 1947 by Whisk Co. of New York, Inc., New York. Claims use since July 1, 1928.

KNU AIRE—This in upper case reverse letters on a lined rectangular background, the letters "Knu" above and to the left of the letters "Aire" for odor neutralizer. Filed June 14, 1946 by National Polish Co., Van Wert, O. Claims use since Mar. 15, 1940.

ISAAC'S SATIS-FACTION — This in large and small capital and upper case reverse letters on a quadrangular background for insecticides. Filed Sept. 9, 1946 by Mark Isaacs & Co., Jacksonville, Fla. Claims use since 1923.

KREELON — This in upper case, bold letters for surface active agents. Filed Sept. 23, 1946 by Wyandotte Chemicals Corp., Wyandotte, Mich. Claims use since Sept. 9, 1946.

NOTT'S—This in upper and lower case, script letters in the form of rope and on a rectangular background beneath which is an approximately square area formed by the rope for insecticides. Filed Oct. 7, 1946 by Nott Manufacturing Co., Mt. Vernon, N. Y. Claims use since Apr. 11, 1946.

BUZAWAY—This in upper case, bold letters for perfume for driving off insects such as mosquitoes. Filed Nov. 29, 1946 by Geo. H. Gould Co., Louisville, Ky. Claims use since July 18, 1919.

DUZ MOR—This in upper case, extra bold, black letters for louse powder. Filed Dec. 3, 1946 by Hilltop Laboratories, Minneapolis. Claims use since Mar., 1943.

TENSITE—This in upper case, extra bold, black letters for insecticides. Filed Dec. 30, 1946 by Cenol Co., Chicago. Claims use since Dec. 2, 1946.

BAQUENOS — This in upper case, bold letters for vermifuge. Filed Jan. 24, 1947 by Winthrop Products, Inc., New York. Claims use since on or about Feb. 28, 1946.

NUODEX — This in upper case, bold, stencil letters for insecticides. Filed Feb. 20, 1947 by Nuodex Products Co., Elizabeth, N. J. Claims use since 1924.

THREE LITTLE BOTTLES THAT BUILT THE PLANT—This in upper case, bold letters above and beneath three bottles for insecticides. Filed Feb. 20, 1947 by Nuodex Products Co., Elizabeth, N. J. Claims use since 1937.

PING—This in upper case, bold letters for insect repellent lotion. Filed Feb. 28, 1947 by McKesson & Robbins, Inc., New York. Claims use since Feb. 26, 1947.

GLANCE—This in upper and lower case, bold, script letters for shampoo. Filed Mar. 13, 1947 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Feb. 28, 1947.

SOOTRACIDE—This in upper case, extra bold, letters for soot removing composition. Filed Apr. 1, 1947 by Metropolitan Refining Co., Long Island City, N. Y. Claims use since 1930.

ALL 'N 1 — This in upper and lower case, extra bold letters and numeral for hair shampoo. Filed May 3, 1947 by Continental Soap Corp., Chicago, Ill. Claims use since Dec. 21, 1946.

ORBISCIDE — This in upper case, bold letters for insecticides. Filed June 18, 1947 by Orbis Products Corp., New York. Claims use since Nov. 25, 1946.

VERDOL—This in upper case, bold, stencil letters for insecticides. Filed June 30, 1947 by Luce Laboratories, Inc., New York. Claims use since Feb. 9, 1929.

TRI-ME—This in upper and lower case, extra bold letters for furniture polish. Filed Oct. 16, 1946 by Bernice Carll, Sacramento, Calif. Claims use since Aug. 20, 1946.

ML—This in upper case, extra bold letters, the perpendicular portion of the "L" being the second downstroke of the "M" for dry cleaning compounds. Filed Mar. 15, 1946 by Midland Laboratories, Dubuque, Ia. Claims use since Mar. 15, 1946.

CIMOTA—This in upper case, extra bold, letters for metal cleaner. Filed Apr. 3, 1946 by C. E. Wright & Brother, Mishawaka, Ind. Claims use since Dec., 1945.

GOLLY!—This in upper and lower case, bold, script letters for washing compound. Filed Sept. 18, 1946 by Nugul Chemical Co., Norfolk, Nebr. Claims use since Jan. 10, 1945.

WHEN KNIGHTS WERE BOLD—This in upper case letters printed above a drawing of two knights tilting for shave sticks. Filed Nov. 16, 1946 by Gourielli, Inc., New York. Claims use since Apr. 5, 1945.

The fanciful drawing of the head and wing-tips of a parrot for cleaning and washing compound. Filed Nov. 18, 1946 by Advanco Laboratories, Saginaw, Mich. Claims use since Jan. 1, 1939.

"MAMZELL"—This in lower case, extra bold letters for dry cleaning preparation. Filed Nov. 22, 1946 by Sapo Elixir Chemical Co., St. Louis. Claims use since May 1, 1945.

TAL-CAMP—This in upper case, bold letters for soap. Filed Dec. 12, 1946 by Tal-Camp Soap Products Co., Lafayette, La. Claims use since Oct. 1, 1946.

AMOCO—This in upper case, extra bold letters across an oval emblem, part of which is a torch, for soap. Filed Dec. 17, 1946 by American Oil Co., Baltimore. Claims use since July 2, 1946.

MODEL—This in upper case, extra bold letters for cleaning fluids. Filed Dec. 18, 1946 by Catolite Co., Dallas, Tex. Claims use since June 3, 1946.

DARB—This in extra large, large and small upper case, bold letters for soap. Filed Dec. 19, 1946 by Darb Products Co., Fort Dodge, Ia. Claims use since Apr. 26, 1945.

DCAT Shawnee Meeting

The fifty-seventh annual meeting of the Drug, Chemical and Allied Trade section, New York Board of Trade, was held at Shawnee-on-Delaware, Pa., September 24 to 26. The general meeting, held Thursday afternoon, September 25, included the presentation of annual reports and the election of a new executive committee.

FRED J. STOCK

The new committee elected the following officers of the section to serve during the next fiscal year: Chairman—Fred J. Stock, vice-president, Chas. Pfizer & Co.; vice-chairman — Robert B. Magnus, Magnus Mabee & Reynard, Inc.; treasurer—Hugh S. Crosson, McKesson & Robbins Inc., (re-elected); secretary—Helen L. Booth (re-elected). Carl M. Anderson, assistant to the president, Merck & Co., was re-appointed counsel. The retiring chairman, Dr. Carle M. Bigelow, Calco Chemical Division, American Cyanamide Co., automatically becomes a member of the section's advisory council, composed of the ex-chairmen for the past five years.

The guest speaker at the business session was Dr. Ivor Griffith, president of the Philadelphia College of Pharmacy and Science, who spoke on "Predictions of Things to Come in Drugdom and Elsewhere." At the Friday afternoon round-table discussion on current economic and industry problems, Dr. Carle M. Bigelow, presided. Charles Slater of J. T. Baker Chemical Co. was the 1947 DCAT golf cup winner.

Stanley Heads Committee

John T. Stanley, John T. Stanley Co., New York, has been appointed chairman of the soap division in the 42nd annual maintenance appeal for the Travelers Aid Society, New York. He will direct a committee of men in the soap and related fields who are soliciting contributions for the society.

Colgate Gets Safety Award

The National Safety Council's award of honor for distinguished service to safety was recently awarded to Colgate - Palmolive - Peet Co., Jersey City. The award is in recognition of the safety record made by the company during 1946.

BERCO—This in upper case, extra bold letters for insecticides. Filed June 27, 1946 by Berwyn Chemical Co., Berwyn, Pa. Claims use since Nov. 20, 1945.

HED-GENE — This in upper case, extra bold letters on a rectangular background for lice and nit killing lotion for use on the human body. Filed Oct. 11, 1946 by Baldwin Pharmacal Co., Newark, N. J. Claims use since Sept. 23, 1946.

RAPITOX.— This in upper case, bold letters for active chemical ingredient for use in insecticide manufacture. Filed Dec. 11, 1946 by Hercules Powder Co., Wilmington, Del. Claims use since Nov. 8, 1946.

AMOCO—This in upper case, bold letters across an oval emblem, of which a torch is part, for DDT insecticide. Filed Dec. 17, 1946 by American Oil Co., Baltimore. Claims use since July 2, 1946.

AMOCO—This in upper case, bold letters across an oval emblem, part of which is a torch, for disinfectant. Filed Jan. 21, 1947 by American Oil Co., Baltimore. Claims use since July 2, 1946.

GAVICIDE.— This in upper case, open letters for insecticides. Filed Feb. 7, 1947 by Pacific Guano Co., Berkeley, Calif. Claims use since Sept. 1, 1944.

ORTHENE — This in upper case, bold letters for insecticides. Filed Mar. 10, 1947 by California Spray-Chemical Corp., Wilmington, Del. Claims use since Feb. 7, 1947.

SOCAL—This in upper case, extra bold, black letters for insecticidal carriers and solvents. Filed Mar. 10, 1947 by Standard Oil Co. of California, Wilmington, Del. Claims use since Nov., 1934.

GAMMOL — This in upper case, extra bold, black letters for insecticides. Filed Apr. 15, 1947 by California

Spray - Chemical Corp., Wilmington, Del. Claims use since Mar. 20, 1947.

RAMONA & PEREZ—This in upper case, open and upper case letters arranged on both sides of a couple dancing for laundry cleaning fluid. Filed Apr. 17, 1947 by Ramona & Perez Co., New York. Claims use since Mar. 1, 1947.

LEXONE—This in upper and lower case, extra bold, script letters for insecticides. Filed Apr. 18, 1947 by E. I. du Pont de Nemours and Co., Wilmington, Del. Claims use since Feb. 5, 1947.

DYBASIK — This in upper and lower case, extra bold, italic letters for tooth powder. Filed Apr. 22, 1947 by Castle Products Co., Los Angeles. Claims use since Mar. 19, 1947.

VITRESAN — This in upper case, bold, italic letters for germicide. Filed May 17, 1947 by Economics Laboratory, Inc., St. Paul, Minn. Claims use since Aug. 1, 1946.

PYROCIDE MULTICIDE — This in large and small reverse capital letters on a background that resembles an hour glass, having a white bar across the mid-section, the word "Pyrocide" being above the bar and the word "Multicide" below it, for insecticides. Filed May 24, 1947 by McLaughline Gormley King Co., Minneapolis. Claims use since Apr. 17, 1947.

APS—This in upper case, extra bold, oversize letters for solvents used in the manufacture of insecticide concentrates. Filed May 26, 1947 by John Powell & Co., New York. Claims use since Feb. 7, 1946.

QD—This in upper case, extra bold, oversize letters for disinfectants. Filed May 26, 1947 by John Powell & Co., New York. Claims use since Mar. 31, 1947.

LURAVEL — This in upper and lower case, bold, script letters for creme shampoo. Filed June 6, 1947 by Farr Products, Trenton, N. J. Claims use since May 26, 1947.

ANTARA—This in upper case, bold letters for detergents for household and industrial use. Filed May 31, 1946 by General Aniline & Film Corp., New York. Claims use since Apr. 11, 1946.

LAUNDRY-DU—This in upper case, open and shadow letters for detergent for use in fabric laundering machines. Filed Oct. 15, 1946 by Central States Laboratories, Columbus, O. Claims use since July 20, 1946.

WHITE DIAMOND—This in upper case, bold letters for metal cleaning compound. Filed Nov. 25, 1946 by Matchless Metal Polish Co., Chicago. Claims use since July 1, 1887.

"CHAMPION"—This in upper case, bold letters in the form of an arc for glass cleaning and polishing preparation. Filed Dec. 23, 1946 by Matchless Metal Polishing Co., Chicago. Claims use since Oct., 1894.

MUFTI—This in upper case, extra bold letters for shoe white. Filed Dec. 24, 1946 by Plough, Inc., Memphis, Tenn. Claims use since Apr. 1, 1936.

Oval emblem with white band across the center of it with a torch for soap. Filed Dec. 30, 1946 by American Oil Co., Baltimore. Claims use since July 2, 1946.

Woburn Names Atwood

Woburn Chemical Corp., Harrison, N. J., recently announced the appointment of Ward L. Atwood, as-

WARD L. ATWOOD

sistant to the president, as sales manager. Richard O'Rourke, vice president has resigned as sales manager due to illness, but will continue serving the company on special industrial relations projects. Mr. Atwood joined Woburn in 1940. He was in charge of the export division prior to being made assistant to the president.

Shaving Soaps Classified

Latherless or brushless shaving cream is closer to the "toilet preparation" family than to "soap; whereas shaving soap in cake, stick, bar, powder, or liquid form really is "soap," according to conclusions reached by C. W. Bennett, examiner for the Interstate Commerce Commission. If the examiner's views are accepted by ICC, it will mean that latherless shaving preparations will carry a "toilet preparations" rating of first class less-truck-load or third class volume shipment. Similarly, should the Commission accept the examiner's recommendations, shaving soaps and shaving creams which make a lather when used will be rated as "soap" which carries a fourth class rating. When used will be rated as "soap" which carries a fourth class rating.

Offers Cream Shampoo

Barbara Gould, Inc., New York, is entering the cream shampoo market with a product known as "Beauty" cream shampoo, retailing at $1 for four ounces and $1.75 for eight ounces plus tax. The shampoo is of the soapless type and contains lanolin.

Karseal Corp. Formed

Karseal Corporation has been formed in Los Angeles County, with 2500 shares of no par value capital stock, to manufacture and deal in soaps, cleaning solvents, cleaning compounds and polishes. Directors are: Clarence L. Payne and Floyd C. Christy, both of Burbank, Calif.; and Ralph A. Dunn, of Los Angeles.

GAMECOCK—This in lower case, bold letters beneath a game cock for shaving soap. Filed Jan. 3, 1947 by Leo Mann, Boston. Claims use since Nov. 23, 1946.

Oak leaf with two acorns at the base of the leaf for bath soap. Filed Jan. 8, 1947 by Lightfoot Schultz Co., New York. Claims use since Jan. 26, 1942.

AMOCO—This in upper case, bold letters across an oval emblem, part of which is a torch for soap. Filed Jan. 21, 1947 by American Oil Co., Baltimore. Claims use since July 2, 1946.

OLIVER GOLDSMITH—This in upper case letters, the letters "liver" being superimposed on the letter "O" and the letters "oldsmith" superimposed on the "G" for roach and water bug powder. Filed Aug. 20, 1946 by Oliver Goldsmith Exterminating Co., Waco, Tex. Claims use since July 10, 1946.

RAT-TU — This in upper case, bold letters for rodenticide. Filed Oct. 25, 1946 by Nott Manufacturing Co., Mount Vernon, N. Y. Claims use since Oct. 8, 1946.

1068 VELSICOL.— This in upper case bold letters across a "V," which is superimposed on a reverse disc on the upper portion of which are the numerals "1068" for insecticides. Filed Mar. 5, 1947 by Velsicol Corp., Chicago. Claims use since Feb. 11, 1947.

GY-COP—This in upper case, extra black, bold letters for insecticides. Filed Apr. 4, 1947 by Geigy Co., New York. Claims use since Mar. 24, 1947.

SEALITE—This in upper case, bold letters for petroleum wax. Filed Apr. 9, 1947 by Standard Oil Co. of New Jersey, Wilmington, Del. Claims use since Mar. 22, 1943.

PENPHENE.— This in upper and lower case, bold, letters for insecticides. Filed Apr. 26, 1947 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since Mar. 25, 1947.

T-S-O—This in upper case, open letters for disinfectant. Filed May 7, 1947 by Tri-State Chemical Co., Buffalo. Claims use since Jan. 30, 1947.

BLADEX—This in upper case, extra bold, stencil letters for insecticide.

Filed May 18, 1947 by Shell Oil Co., San Francisco. Claims use since Mar. 5, 1947.

VERSA-TOL—This in upper case, bold letters for insecticides. Filed June 18, 1947 by Andrew Wilson, Inc., Springfield, N. J. Claims use since Jan., 1947.

VOTOL—This in upper and lower case, extra black, bold letters for insecticides. Filed June 25, 1947 by Waltham Chemical Co., Waltham, Mass. Claims use since June 5, 1947.

THORAL — This in upper and lower case, extra bold, letters for germicidal preparations. Filed July 1, 1947 by Turco Products, Inc., Los Angeles. Claims use since Aug. 31, 1945.

SELCOL—This in upper case, bold letters for disinfectant germicide for sanitizing of dishes. Filed July 1, 1947 by Selig Co., Atlanta, Ga. Claims use since Jan., 1947.

MERIDEX — This in upper case, bold letters for talcum preparation containing DDT for use on human hair. Filed July 2, 1947 by Royal Pharmacal Corp., Brooklyn. Claims use since Apr. 23, 1947.

M W RIEBECK—This in upper case bold letters within a circle for montan wax. Filed Oct. 23, 1946 by Strohmeyer & Arpe Co., New York. Claims use since 1920.

PARADRY — This in upper and lower case, bold letters for floor cleaning compound. Filed Apr. 26, 1945 by Century Laboratories, Inc., Brooklyn. Claims use since Mar. 5, 1945.

ZIPPY—This in large and small, open and shadow capital letters for granulated soap. Filed May 4, 1946 by Continental Chemical Co., Sacramento, Calif. Claims use since Apr. 17, 1946.

SAN-OVER—This in upper case, open letters for floor cleaner. Filed May 25, 1946 by Sanitek Products Co., Los Angeles. Claims use since Sept., 1943.

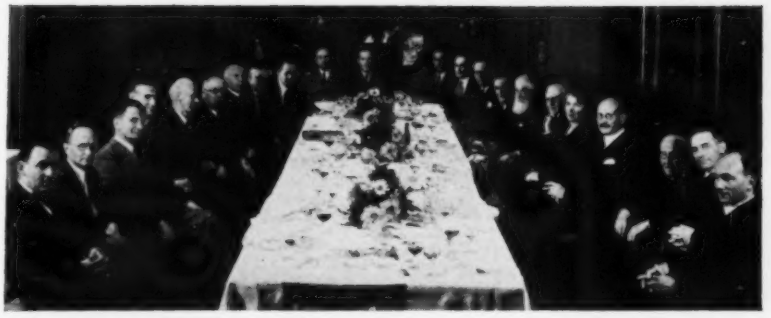
PALMOLIVE—This in upper case, bold, reverse letters on a panel across the face of a rectangle with rounded corners for toilet soap. Filed Aug. 10, 1946 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Jan. 1, 1900.

SCATA-GRIME—This in upper case, bold letters adjacent to a jar bearing the name "Scata-Grime" and having face, body, legs and arm, in the arm of which is a club that is being waved at a group of tiny fanciful figures apparently representing dirt, for soap paste hand cleaner. Filed Aug. 17, 1946 by Thomas F. Petronio, Long Island City, N. Y.

WALLTET—This in upper case, extra bold letters for household cleansing powder. Filed Aug. 21, 1946 by Himark 100 Products, Muncie, Inc. Claims use since May 23, 1946.

CROSS COUNTRY—This in upper and lower case, bold, old English, letters for hand soap. Filed Oct. 3, 1946 by Mark Cross Co., New York. Claims use since Jan., 1946.

WOOL-RAY—This in upper case, extra bold, black letters for washing powder for woolens, etc. Filed Oct. 18, 1946 by Stevens-Wiley Mfg. Co., Philadelphia. Claims use since Oct. 3, 1946.



Professor L. Ruzicka winner of the Nobel prize for chemistry in 1939, is honored on the occasion of his 60th birthday at a dinner organized by Andre Firmenich, Firmenich & Co., Geneva, on August 29th at the Hotel des Bergues, Geneva, Switzerland. The event coincided with the 127th congress of the Swiss Society of Natural Science. Dr. Hartman, managing director of CIBA, presented Professor Ruzicka on behalf of the Swiss Chemical Society and in the name of his principal collaborators a selection of hitherto unpublished scientific works published in his honor.

New Colloidal Clay

A new colloidal form of the mineral attapulgite, a complex hydrated magnesium-aluminum silicate, was recently announced by Attapulgus Clay Co., Philadelphia. The new product, trade named "Attasol," disperses rapidly in aqueous solutions and can be made to form stable viscous suspensions with gel-forming properties. Colloidal dispersions of Attasol are not flocculated by electrolytes and exhibit adsorptive and detergent powers. Attasol is a flowable, white, non-abrasive powder having a bulk density in the order of 30 pounds per cubic foot. It is chemically inert to most reagents and has a pH of between 6.5 and 7.5. It is said to be a substitute for soap in washing powder, being compatible with builders such as soda ash, silicates and phosphates, particularly for the washing of fabrics heavily soiled with oils, dyes, or inks. Its substitution for soap and a portion of the alkalies is said to result in a longer fabric life and a more brilliant appearance of the washed fabric.

SNUDSY SUDS—This in large and small upper case, black, bold letters for general purpose soapless cleaner. Filed Oct. 26, 1946 by Help, Inc., Chicago. Claims use since June, 1942.

HAPPY DAY—This in upper case, bold letters for sudsing cleaner. Filed Jan. 14, 1947 by Procter & Gamble Co., Cincinnati. Claims use since Dec. 17, 1946.

RC PRODUCTS—This in upper case reverse letters on a rectangular panel, the "RC" much larger than the word "Products" for hand cleansers. Filed Nov. 21, 1946 by Ridgefield Chemical Products Co., Ridgefield, N. J. Claims use since Aug. 15, 1946.

ARWITE—This in upper case, extra bold, black letters for soap flakes. Filed Feb. 14, 1947 by Affiliated Retailers, Inc., New York. Claims use since Sept. 15, 1946.

COPY PLUS—This in upper case, bold letters which are part of an octagonal design for hand cleansing detergents. Filed Mar. 7, 1947 by Copy-Plus, Inc., Milwaukee. Claims use since Jan. 22, 1947.

DWIGHT'S — This in upper case, bold letters for bicarbonate of soda for use as a cleaning and washing agent. Filed Mar. 11, 1947 by Church & Dwight Co., New York. Claims use since 1876.

SECCOM — This in upper case, shadow, open letters for sewer and drain pipe cleaning compound. Filed June 15, 1946 by Southeastern Chemical Co., Atlanta. Claims use since May 1, 1946.

Fanciful drawing of the head and shoulders of a woman emerging from the sea for shampoo. Filed Oct. 11, 1946 by Kay Daumit, Inc., Chicago. Claims use since Feb. 28, 1941.

IRON-8—This in upper case, bold letters and numeral for chemical products for use in combating insects. Filed Nov. 7, 1946 by Monsanto Chemical Co., St. Louis. Claims use since Oct. 2, 1946.

MAGNESIUM-8 — This in upper case, bold letters for chemical products for use in combating insects. Filed Nov. 7, 1946 by Monsanto Chemical Co., St. Louis. Claims use since Oct. 2, 1946.

The fanciful drawing of a boar's head out of whose mouth a pennant is streaming for germicides. Filed Nov. 27, 1946 by Preservative Manufacturing Co., Brooklyn. Claims use since Oct. 2, 1906.

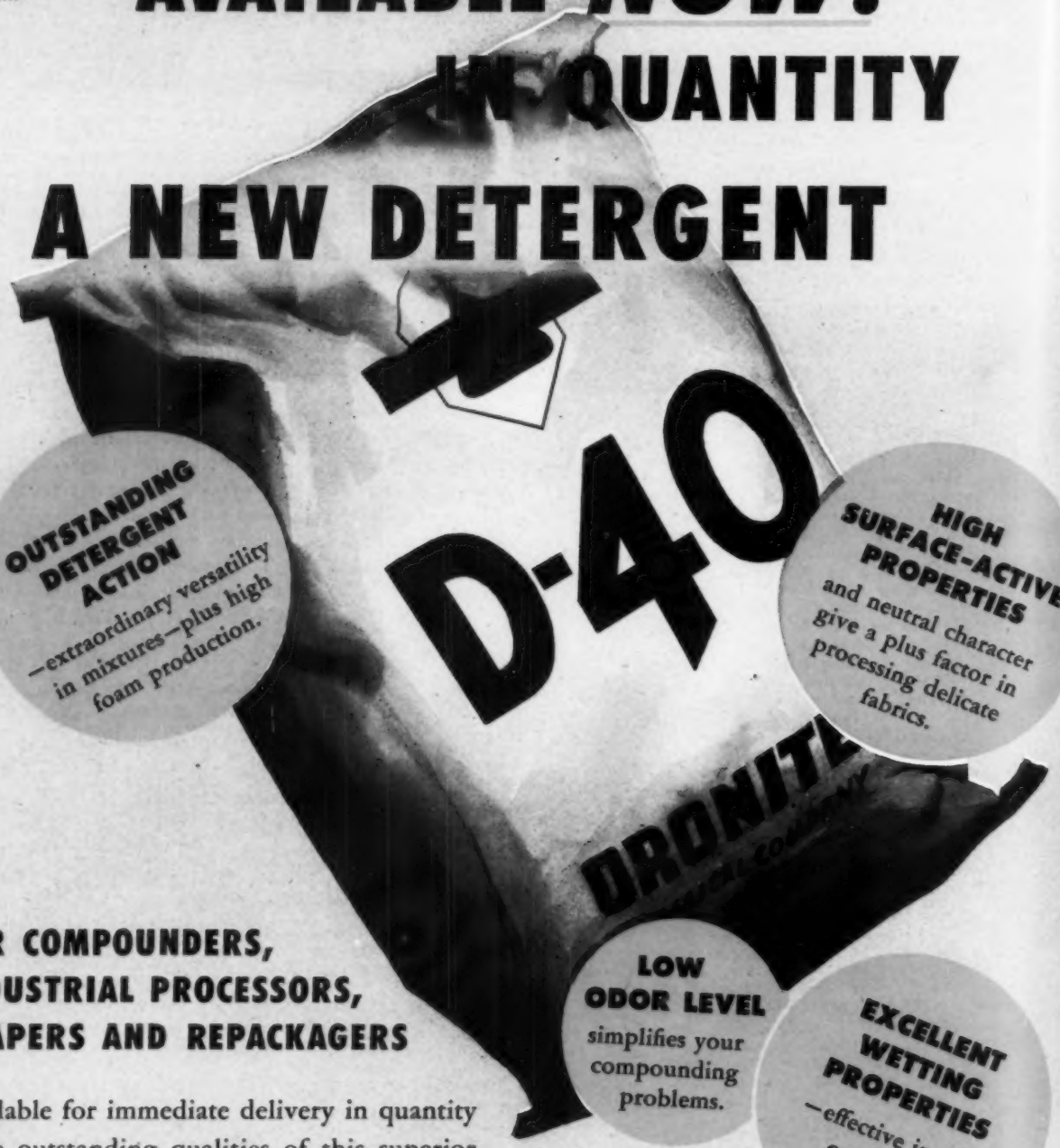
The fanciful drawing of a downward circling insect that is holding its head for insecticides. Filed Mar. 24, 1947 by Cornelius Co., Minneapolis. Claims use since Jan. 1, 1947.

ORONITE
CHEMICALS

REG. U. S. PAT. OFF.

THE NAME TO WATCH IN CHEMICALS

AVAILABLE *NOW!*
IN QUANTITY
A NEW DETERGENT



OUTSTANDING DETERGENT ACTION
—extraordinary versatility in mixtures—plus high foam production.

HIGH SURFACE-ACTIVE PROPERTIES
and neutral character give a plus factor in processing delicate fabrics.

LOW ODOR LEVEL
simplifies your compounding problems.

EXCELLENT WETTING PROPERTIES
—effective in acid or alkaline medium.

FOR COMPOUNDERS, INDUSTRIAL PROCESSORS, SOAPERS AND REPACKAGERS

Available for immediate delivery in quantity —the outstanding qualities of this superior detergent make it a top choice in the compounding, textile processing and in the industrial cleaning fields.

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BIDS AND AWARDS

Misc. Treasury Bids

The following bids were received in a recent opening for miscellaneous supplies by the Treasury Department, Bureau of Federal Supply, Washington, D. C., on item 1, 768 gallons of disinfectant (51-D-392) and item 2, 375 gallons of disinfectant (51-D-393): Selig Co., Atlanta, item 1, $1.20, and item 2, $1.05; A.M.R. Chemical Co., Brooklyn, item 1, $1.05 and item 2, $1.02; James Huggins & Son, Malden, Mass., item 1, 55 cents and item 2, 52 cents; Virginia Specialty Corp., Lynchburg, Va., items 1 and 2, 90 cents; Baird & McGuire Co., Holbrook, Mass., item 1, 72 cents and item 2, 67 cents; R. M. Hollingshead Corp., Camden, N. J., item 1, 79 cents and item 2, 65 cents; Uncle Sam Chemical Co., New York, item 1, 87 cents and item 2, 98 cents.

In another Treasury Department opening, the following bids were received on item 1, (51-P-1105), 96 gallons of furniture polish, and item 2, (51-P-1046-15), 36 gallons of automobile polish: Industrial Distributors, New York, item 1, 62.5 cents and item 2, $1.40; Dajan Chemical Co., South Boston, items 1 and 2, $1.56; Davies-Young Soap Co., Dayton, O., item 1, 92 cents; Dewitt Laboratories, Pittsburgh, Pa., item 1, 70 cents; International Metal Polish Co., Indianapolis, item 1, $1 and item 2, $1.35; Solehine Mfg. Co., Fall River, Mass., item 1, $2; Solarine Co., Baltimore, item 1, 75 cents; C. P. Baker & Co., Philadelphia, item 1, $1.26; U-San-O Corp., St. Louis, item 1, $1.10 and item 2, $1.95; Idico Products Co., New York, item 1, $1.27; Permo Products Corp., Newark, N. J., items 1 and 2, $3.50; James Good Co., Philadelphia, item 1, 70 cents; Miami Products & Chemical Co., Dayton, O., item 1, $1.50; R. M. Hollingshead Corp., Camden, N. J., item 1, 79 cents a gallon (in one quart containers) and item 2, $1.39; Oil Specialties & Refining Co., Brooklyn, item 1, 86 cents and item 2, $1.013; Buckingham Wax Co., Long Island City, N. Y., item 1, 75 cents; Liquid Veneer Corp., Washington, D. C., items 1 and 2, $1.50; Woodhouse Stationery Co., Washington, D. C., item 1, $6.10; Park Chemical Co., Detroit, item 2, $1.25; Joseph E. Frankle Co., Philadelphia, item 1, 74 cents and item 2, $1.25; Daycon Products Co., Washington, D. C., item 1, 89 cents and item 2, $1.74; Dorsett-Jones, Baltimore, item 1, 93 cents; N. Brittingham & Sons, Philadelphia, item 1, 96 cents; Bri-Test Products, Inc., New York, item 1, 54 cents, and Imperial Products Co., Philadelphia, item 1, 48 cents and item 2, 90 cents.

P. O. Cleaner Bids

In a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C., the following bids were received on 5,000 gallons of cleaner and renovator: G. H. Tennant Co., Minneapolis, $1.38 a gallon; Baltimore Paint & Color Works, Baltimore, $1.16 in five gallon cans; Sherwin - Williams Co., Washington, D. C., $1.34; Crown Supply Co., Washington, D. C., $2.50 a gallon, and Lasting Products Co., Baltimore, $2.73.

Treasury Soap Bids

The following bids were received on item 1, (51P-2600), 12,000 pounds of scouring compound; 2, (51S-1716), 9,200 pounds of soap paste; 3, (51S - 1674 - 10), 2,864 pounds of laundry soap; in a recent opening for miscellaneous supplies by the U. S. Treasury Department, Bureau of Supplies, Washington, D. C.: American Soap & Washoline Co., Cohoes, N. Y., item 1, 2.95 cents, and 3, 21.91 cents; Gliss'n Products Co., Chicago, item 3, 15.25 cents; Mackenzie Labs., Philadelphia, item 1, 5.24 cents; Janitors' Supply House, Baltimore, item 1, 4 cents and item 3, $5.50 a case of 60 16-ounce packages; Crystal Soap & Chemical Co., Philadelphia, item 2, 12 cents; Kamen Soap Products Co., New York, item 3, 19 cents; Larkin Soap Co., Trenton, N. J., item 1, 6 cents; Virginia Specialty Corp., Lynchburg, Va., item 1, 4.4 cents; Huntington Laboratories, Huntington, Ind., item 2, 18 cents; Phipps Products, Boston, item 1, 4.83 cents; Clifton Chemical Co., New York, 10.5 cents; E. F. Drew & Co., New York, item 2, 10.9 cents, steel lug type drums; Chemical Manufacturing & Distributing Co., Easton, Pa., item 1, 3.4 cents; N. Brittingham & Sons, Philadelphia, item 3, 10.4 cents; Peck's Products Co., St. Louis, item 1, 3.875 cents, and item 2, 10.5 cents; Marjo Products Co., Chicago, item 1, 3.75 cents; Franc Imperial Products Co., Philadelphia, item 1, 3.26 cents silica type and 3.97 cents feldspar type; Pal Products Manufacturing Co., Brooklyn, item 1, 3.2 cents; Selig Co., Atlanta, item 2, 14 cents; Ampion Corp., Long Island City, N. Y., item 2, 14.5 cents; Puritan Co., Rochester, N. Y., item 2, 10.9 cents; Harley Soap Co., Philadelphia, item 2, 8.1 cents; R. M. Hollingshead Corp., Camden, N. J., item 2, 18.5 cents; National Cleanser Products Co., New York, item 1, 4 cents.

P. O. Sweep Compound Bids

The following bids were received on 10,000 pounds of sweeping compound in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C.: American Forest Products Co., Baltimore, 2.7 cents a pound; American Excelsior Corp., Chicago, 2.225 cents; Dorsett-Jones, Baltimore, 5.8 cents, and Paxson Manufacturing Co., Philadelphia, $5.20 per barrel of 200 pounds.

GPO Soap to Peerless

Peerless Chemical Co., Detroit, received the award with a bid of 31 cents per gallon on 80 drums of liquid soap in a recent opening for miscellaneous supplies by the Government Printing Office, Washington, D. C.

RAW MATERIAL MARKETS

As of September 30, 1947

A SERIES of almost uninterrupted price increases has characterized the fat and oil market during the past month. As of this date, the price of tallow (fancy grade) is quoted at 20 cents, with small buyers reported in the market bidding 21 cents. A continuation of the advance is expected during early October. Thus, in a period of about three weeks, tallow prices have skyrocketed nearly nine cents. Early in September tallow and greases were selling for around 12 cents, the low point to which they had fallen during April from a record high of 28 cents established earlier in the year. The sharp price increase recorded by tallow is by no means confined to that one important soap making fat. Nearly all other oil and fat prices surged upwards during the month. At this writing coconut oil is quoted at 19 cents for immediate shipment, soybean is selling for 21 cents and cottonseed oil is 23 cents a pound. Copra prices advanced during the month, the latest increase, reported two days ago, totaled $15 a ton and brought the price of copra to $205 a short ton, c.i.f., Pacific Coast. At the same time, it was indicated, Philippine sellers have withdrawn offerings, expecting higher prices later.

The action of the Department of Agriculture in sharply expanding our fat and oil export commitments for the fourth quarter, plus a world-wide shortage of fats and oils, the European crop failure, and increased demand for oils and fats for both edible and inedible purposes are the reasons generally assigned for the renewed fat and oil price spiral upward. A more complete treatment of the reasons for the current price advances is presented on page 44 of this issue.

In spite of current high prices, sales of fats and oils are reported heavy, probably as a hedge against further increases.

Meanwhile, the Department of Agriculture has predicted a slight reduction in production of animal fats for the crop year beginning October, 1947. This may mean lowered lard output as a result of the short corn crop. The condition of the corn itself may be a determining factor, since if a sizeable portion of the corn crop is soft, heavy fall and winter feeding of soft corn would tend to slow down

the marketing of hogs from the 1947 spring pig crop. A three per cent increase in hog slaughter is expected, but yields of lard per hog are likely to decline enough to more than offset the slight increase in slaughtering. In addition, the reduced quantity and quality of the corn crop this year may tend to discourage breeding of sows for the 1948 spring pig crop and bring about a further decrease in lard production in the fall and winter of 1948-49.

The possibility of the East Indies resuming its former role as a competitor of the Philippines as the leading producer of coconut products received a distinct setback recently by the resistance of native sellers to the low prices being paid by the Netherlands Copra Fund. Current receipts in the East Indies are said to be less than a quarter of normal and will be well under the 200,000 ton goal set for 1947. As a result the copra fund announced an increase in buying prices and stated that all traders who guarantee to sell the fund at least 10 tons per month would be entitled to buying licenses for cloth and other imported commodities. Official buying prices, in addition to being only about 30 per cent of the world level, are in terms of the depreciated Netherlands Indies guilder. The Dutch Copra Fund, established under Government auspices, is intended to stabilize buying prices. Further complicating the situation is the story that the difference between the buying and selling prices is used to finance the Dutch war effort on Java and Sumatra. Talk of smuggling copra from the islands persists, although the hazard involved is great because of the activity of the Dutch Navy in the area.

Copra export is allowed only through the copra fund. Such shipments of copra as might get through the blockade would be very profitable because of the higher price, which is dollar backed and because of the scarce consumer goods that can be purchased with dollars. Most copra production is being stored until some change in the government's policy can be effected.

Increased prices for paradichlorobenzene were announced by one large producer during the month. The new range is 14 to 15½ cents a pound. Others are pricing their para at 12½ to 14 cents, with advances indicated for the near future. Increased chlorine costs are given as the reason for the new advance in price. Even at the new prices paradichlorobenzene is still reported scarce.

The essential oil price picture is somewhat mixed. Lemongrass and citronella prices, it is indicated, will show some tendency to advance in the immediate future, according to importers of the Indian product. However, prices on Ceylon citronella and lemongrass oil are quite a bit lower than those prevailing a year ago. The European essential oil outlook is also confused, an example of this situation being lower prices for Italian spot oils than for futures.

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PRODUCTION SECTION

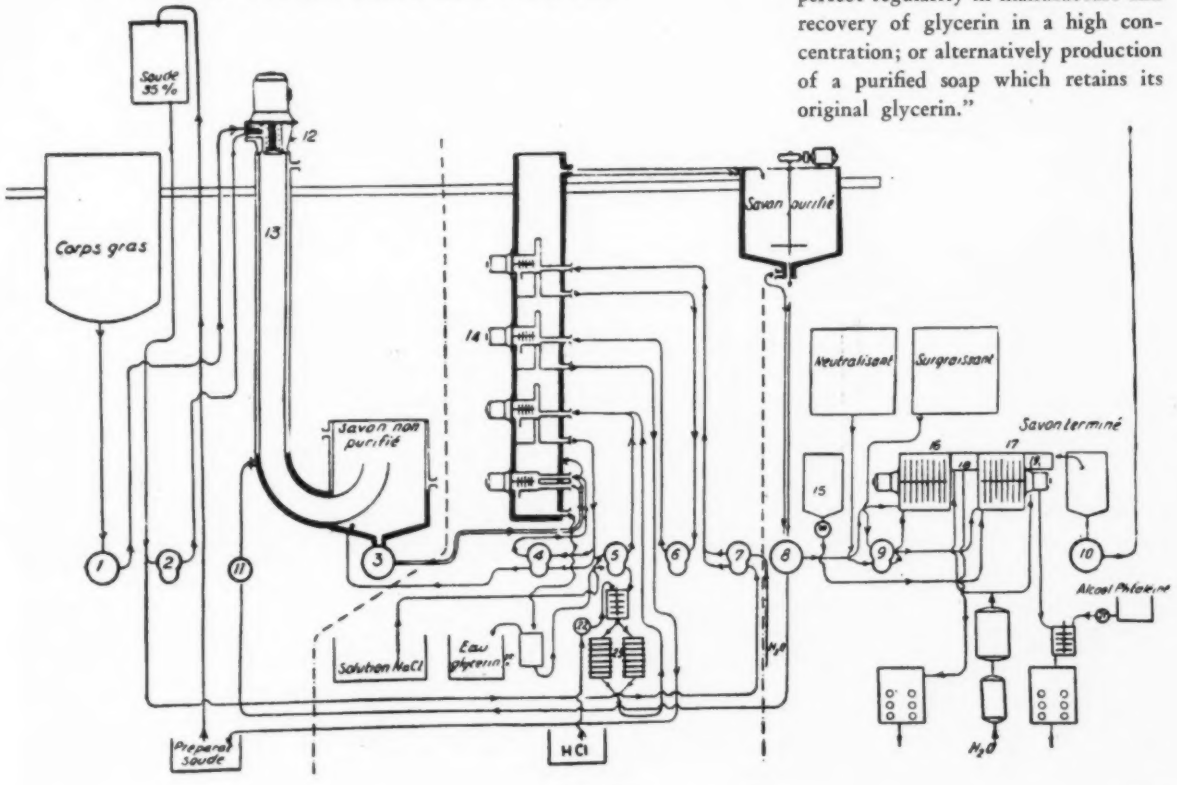
A French Continuous Process for Soap Making

Salt is removed by interchange with caustic soda
Saponification accelerated by use of colloid mill
New volumetric proportioning pump is described

A NEW French method for the continuous processing of soap is described in an article by M. J. Seemuller in the July issue of *"Soap, Perfumery and Cosmetics."* This translated and condensed version of the original paper published in the French journal *"Corps Gras"* unfortunately gives but a general description of the process and does not contain data to verify the many statements regarding performance and economies claimed. If such data are forthcoming at a later time the process will lend itself to more critical appraisal.

According to the Seemuller report, "characteristics of the process are the very rapid saponification of neutral fats at a low temperature and pressure, without addition of heat; the purification and accurate control of the soap; a double continuous automatic control of the unsaponified portion and the free alkali, resulting in perfect regularity in manufacture and recovery of glycerin in a high concentration; or alternatively production of a purified soap which retains its original glycerin."

Figure 1. General scheme of process: 1. Pump for measuring fatty substances; 2. Pump for measuring caustic; 3. Pump for measuring unpurified soap; 4.-5. Pumps for measuring brine; 6.-7. Pumps for measuring soda lye; 8. Pump for measuring purified soap; 9. Pump for measuring neutralizer and superfatting substance; 10. Pump for finished soap; 11. Hot water circulating pump; 12. Premier mill; 13. Reaction tube; 14. Decanter; 15. Phosphoric acid tank; 16. First neutralization stirrer; 17. Second neutralization stirrer; 18. Pump for dealing with unsaponified substances; 19. Pump for handling free alkali; 20. Phosphoric acid pump; 21. Phthalein-alcohol pump; 22. Hydrochloric acid pump; 23. Filter presses.



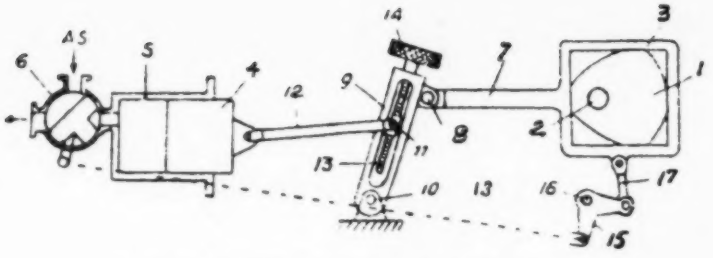


Figure 2. Construction diagram of volumetric piston pump.

The essential elements of the process are (1) saponification, (2) washing and (3) adjustment to a neutral soap. In addition to equipment for saponification are glycerine recovery and control apparatus. The process involves the bringing together of the fatty oil blend with the correct lye requirement, in a mixer and homogenizer by which very intimate mixing is accomplished.

Quoting from Mr. Seemuller's description, "to do this, volumetric piston pumps are used; they are also employed in all the other parts of the apparatus in the course of washing and finishing." They have the characteristics shown in Figure 2. The pumps are "provided with three-way cocks, and the full opening of the ports is arranged to occur before the movement of the piston, so that the latter works only with ports opened as far as possible. The pump pistons and the three-way cock are controlled by a single cage, so that there are four distinct movements:

(1) First stroke. Delivery: the piston moves forward while the three-way cock is at a standstill.

(2) Second stroke. Piston at a standstill and opening of three-way cock.

(3) Third stroke. Return of the piston during the stoppage of the distributor.

(4) Piston at a standstill while the distributor returns to its original position.

"The square cage (3) transmits its motion to the piston (4) through a slide (9). It is conected at one end to this slide, which is jointed about a shaft (10), the piston being connected to a slide by a connecting rod (12) mounted on a drilled slide-block (11), whose distance from the shaft of the slide is adjustable by a handwheel (14) with a threaded spindle (13). It follows that as the path of the piston depends upon the position of the slide-block in relation to the rocking shaft of the slide, the delivery of the pump can be regulated both easily and accurately. It is, moreover, quite easy to effect this adjustment while the machine is in motion, either by hand or automatically by the use of pawls engaging with the regulating hand-wheel, these pawls being driven by a set of electromagnets.

Saponification

THE saponification apparatus consists of a premixer and a homogenizer. The premixer is formed by two concentric rings provided with slots, one being fixed and the other revolving at high speed. The fatty substances and lye reach the periphery and are compelled to pass through these rings to reach the center. The mixture is then taken to the homogenizer by a spiral screw, the homogenizer being of the colloid mill type, with a truncated cone type rotor rotating at high speed (3000 rpm) opposite a stator of the same shape. The clearance between the stator and rotor can be accurately adjusted by a micrometer screw. The emulsion leaving the homogenizer falls into a reaction tube, which is merely a double-jacketed tube on the upper part of which there plays a jet of steam so contrived as to bring the wall in contact with the emulsion to about 100° C. so as to start the reaction. Only sufficient heat is required to produce a hot surface to start the reaction, which then continues exothermically, heating the whole reaction tube in 20 or 30 minutes without use of additional steam.

"The soap, which contains about 0.2 per cent free alkali, is collected at the bottom of the reaction tube. The amount of free alkali can be adjusted as desired, but must not be too high. The reaction is unsatisfactory if the amount of soda is less than the theoretical quantity.

"A control apparatus is located here so as to reveal any accidental error that may have taken place in the distribution or measurement of reagents.

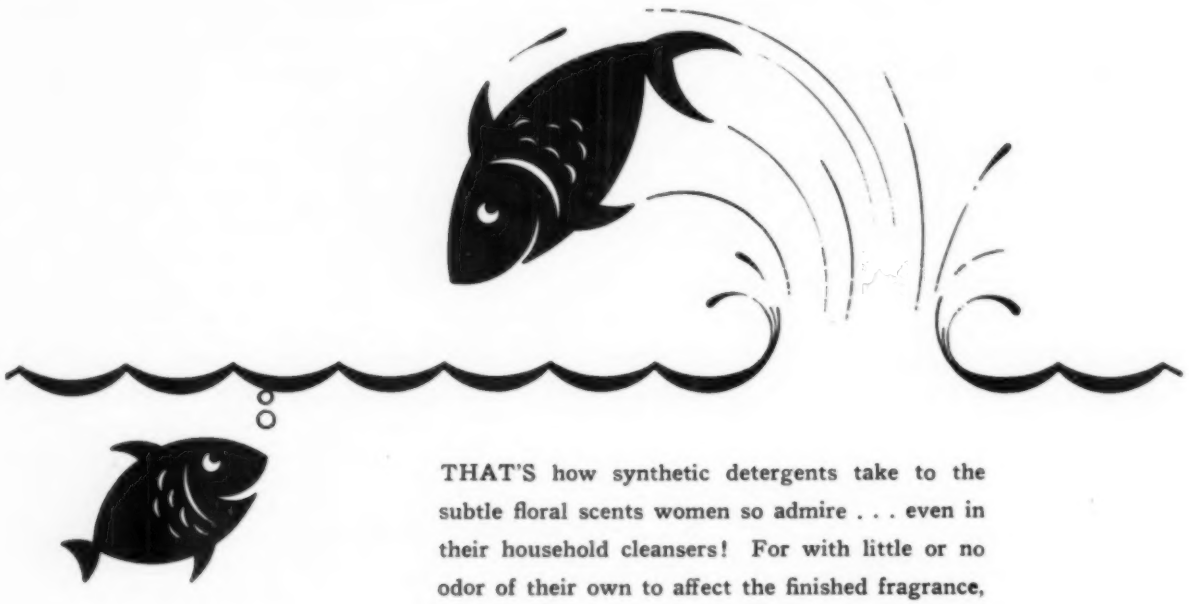
Washing

THE operation of washing the soap to purify it takes place in a large-diameter tube which is described in the report as follows: "This tube is 6 meters long and 80 cms. wide, and has a capacity of 2,500 to 3,000 kilograms per hour production. It is divided horizontally into four sections, the first three from the bottom being of the same height and the fourth slightly longer, e.g. 1.30 meters, 1.30 meters, 1.30 meters and 2.10 meters. Each of these compartments has attached to it, one-third of the way up, a stirrer contained in a water-tight case. This stirrer has an aperture for the input of the liquids and an output aperture into the decanter.

"The conventional method of washing is replaced by another which eliminates the salt from the soap by means of an exchange with caustic soda. To this end, the soap, which has just been washed with salt and contains about 1 per cent salt, is washed with a solution of caustic, the concentration of which is such that the soap does not dissolve in it; this takes place in the two upper stages of the washing decanter against the current. Thus an exchange between caustic soda and salt is effected and a soap is obtained in which the greater part of its salt brine is replaced by caustic alkali of the wash.

"For the washing process, an amount of soda lye corresponding to the quantity of caustic needed for saponifying the fats is used. After washing, there will thus be obtained

LIKE A FISH TAKES TO WATER....



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a soap: (1) free from impurities, (2) free from glycerine and (3) containing a very small quantity of salt, less than that obtained after the ordinary fitting, but containing a very much larger amount of free alkali than by the customary brine changing procedures. The next step is therefore to eliminate this free alkali, and this takes place in the third part of the apparatus.

Neutralization

"THIS part of the plant is described by Mr. Seemuller as follows: "a volumetric proportioning pump removes determined quantities of the alkaline soap. At the same time a second such pump takes the neutralizing materials, which as a general rule consist of a pure fatty acid, the consumption of which is very low, since the amounts of free alkali are relatively small, and/or a very pure fat that is easily saponified, such as high quality coconut oil."

It is a little difficult to interpret from Mr. Seemuller's description the exact sequence of operations necessary for the neutralization. Apparently, the alkaline soap and neutralizing materials consisting of easily saponified fats or fatty acids are proportioned, by means of the volumetric measuring pumps previously described, and pumped into a mixing chamber where final and complete saponification takes place to an equivalence point with the elimination of excessive causticity. For a household soap, "it is possible to use rosin to which has been added some fatty acid to lower its melting point, and make it easier to pump. The soap is then finally delivered to a storage tank, whence it is taken for framing or flaking. It is, however, possible to effect this neutralization by working discontinuously in small tanks, this method being recommended for small installations. The economy of the process does not suffer through this procedure as the operation requires no heat, the first two parts of the process are absolutely automatic. The neutralization is very rapid."

Editor's Note: There may be economic justification for this rather elaborate means of continuous production of soap at relatively low temperatures if the remainder of the process is likewise continuous. The preparation of granules could logically begin from the finished soap as above-described as would also the flaking of toilet soap prior to milling. However, one wonders at the economics of such a process to be followed by the conventional methods of framing, slabbing and cutting, which, although in a sense continuous, present high demands on man-hours and floor space. The soap from this process is in a finished state at low temperatures and would not as economically lend itself to continuous flash drying and extrusion.

The discussion of this process will be continued next month and such points as control methods, advantages claimed and glycerine recovery will be discussed. Comments from various soap-makers and consultants will be offered.

Mist-Refining of Oils

Vegetable or animal oils which contain free fatty acids and other impurities are refined by forming a mist of an alkaline solution, separately forming a mist of the oil, and impinging the mists together so that the two will be intimately mixed, and initial contact of the substances occurs while both are entirely in mist form. The mixed mists are then collected in the form of an emulsion maintained at an emulsion-breaking temperature, on a surface, and the soap stock, resulting from the action of the neutralizing agent on the free acid of the oil, is separated from the oil. W. L. Clayton, L. Fleming, Jr., H. Whittington, J. P. Fuesler, D. Cannafax, D. Sumners, J. M. Johnson, S. Oden, and W. H. Koar. British Patent No. 571,973.

Microscopy of Washing

A microscopic study of the washing process was made with sodium oleate, sodium dodecyl sulfate, a sodium-alkane sulfonate, 9-octadecenyl polyethyleneglycol ether, and dodecyl pyridinium bromide. Anion-active washing agents of various constitutions show only differences in the velocity of dirt removal. With cation-active products the primary replacement of the oil from the fiber surface is similar to that of anion-active washing agents. However, with progressive action there occurs a reabsorption of the dirt by the fiber, which depends on time and the absolute and relative concentrations of the washing agent. W. Kling, E. Langer, and I. Houssner, *Melliand Textilber.* 26 12-14, 56-9; through *Chem. Abs.*

Amplified Distillation

Amplified distillation is a useful technique for the quantitative analysis of mixtures of fatty acid esters, especially for the detection and estimation of minor components and for the analysis of small samples. In amplified distillation an additional component is introduced. This component is so selected that it distills between the components of the mixture and is easily distinguishable and separable from them. A hydrocarbon mixture of petroleum origin meets these requirements for amplified distillation of methyl esters. This permits a more nearly complete separation of the components in the desired purity. A. W. Weitkamp, *J. Am. Oil Chemists' Soc.* 24, 236-8 (1947).

Solubility of Metal Soaps

The solubilities of the myristates, laurates, palmitates, and stearates of magnesium, lead, calcium, barium and zinc have been measured at 25° C. in chloroform and in propylene glycol, as well as in their mixtures. Even where they are sparingly soluble in the solvents separately, they dissolve freely in mixtures of the two. For each metal the solubility is greatest for laurate and least for stearate; it is very low for zinc soaps, particularly zinc stearate.

Heavy metal soaps may be directly titrated with acid in mixtures of propylene glycol and chloroform, using thymol blue as indicator with color change from yellow to pink. S. R. Palit and J. W. McBain, *J. Am. Oil Chemists' Soc.* 24, 190-3 (1947).

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PRODUCTION *Clinic*

By DR. E. G. THOMSSEN, Ph.D.

LAST month we discussed the arrangement of conveyors for the handling of finished goods or packaged raw materials. We did not consider the types of conveyors themselves nor the conveying of powdered and granular materials. To complete our consideration of the conveying problem, it is of interest to consider more fully the various types of conveyors which are available and comment on their adaptability to various purposes.

The more common types of conveyors used are belt, apron, pan, drag and roller conveyors. These come in various sizes, lengths, capacities and are installed at floor level or overhead. By their use it is possible to move an ounce or a ton easily and economically. Portable conveyors as well as fixed ones are available either as single or multiple units. Some are powered, others operate by gravity. Handling packaged goods and packages, incidentally, is a much simpler problem than conveying powdered chemicals. In planning the installation of conveyors for various operations, individual problems must be considered. Very often complicated installations are made when volume dictates a more simple one. It is a common error to disregard future growth involving a need for added capacity. To avoid such planning errors, it is always good policy to obtain quotations and suggestions from several conveyor engineers before deciding upon the final installation.

We like the slogan which the Lamson Conveyor Company uses in one of its catalogs. It reads, "Wasted Steps Sabotage Production." An adaptation of conveying to save steps on small items, often overlooked in factory operation, is that commonly found in department stores. We refer to pneu-

matic dispatch tubes. Substantial labor savings may be made in dispatching letters, requisitions, small tools, samples, laboratory specimens, etc. by the use of these tubes instead of using office boys or girls. Some plants use these tubes as frequently as the telephone for written intercommunications. Where the conditions are appropriate they are well worth considering.

The transfer of powders on a large scale is a problem encountered frequently by manufacturers of soaps and detergents. Considerable savings are afforded by freighting and handling these in bulk rather than in packages. Not only is the cost of the bag or drum saved, but labor is greatly economized when an efficient set-up is installed for this purpose.

Many of us think of the time-honored bucket elevators for handling powdered and granular materials. While buckets are still used in many plants, improved methods are superseding them. Bucket elevators are cheap and easy to install, but when one considers the dust, the difficulty of cleaning and the noise, the newer conveying methods recommend themselves. Bucket elevators are of value for many purposes, however, and when properly installed discharge their full load completely. For granular, non-dusty substances, they are still a favored means of conveying.

Just about as well known as the bucket type conveyor are the drag type and spiral conveyors. The drag type is inexpensive for mainly horizontal conveying and can be boxed in to make it quite dustless. It is more adaptable for use with granular or lumpy substances than for finely powdered ones. Quite often one sees soap chips being moved with this type conveyor. As cleaning these conveyors is rather difficult, it is good policy to confine their use to substances that are compatible or to a single product that can conveniently remain in the conveyor when it stands idle. Spiral conveyors will handle almost any type of material. Most conveyor manufacturers design these in five or six types to adapt them to the kind of material to be conveyed. It is possible to handle non-sticky, damp or even almost pasty substances quite effectively. Spiral conveyors are more easily cleaned out than the bucket or drag type. This recommends their use in many directions. Belt conveyors still are the cheapest to use for mass, horizontal and inclined transfer of bulk materials. When properly installed, well-constructed belt conveyors will move high tonnages at high speed at low costs. By the use of specially-shaped idlers and wide belts, loss by spillage is reduced to a minimum. It is amazing to note some of the large operations pictured in the Link Belt pamphlet on conveyors that have been carried out with belt type conveyors. Small mountains have been moved as just one example.

Very often it is desired to convey, elevate and feed a powdered, granular or lumpy material in one operation. For this purpose the *en masse* conveying operations of the Redler, Mass Flo or Bulk Flo conveyors are

The Right Combination for Uniform Drying

Uniform soap drying is the result of two important factors . . . first, uniform ribbons and second, carefully controlled drying. There is no chance for uniform drying—even in the most carefully designed dryer—if ribbons coming to the dryer vary in thickness. Neither is there the slightest chance for uniform drying—of even the most carefully formed ribbons—unless conditions within the dryer are accurately controlled. Ribbon uniformity is achieved in direct proportion to the degree of precision with which the chilling roll is engineered and built. Proper drying is brought about only to the extent that there is a uniform circulation of heated air, at the right temperature to suit the characteristics of the particular soap, for the correct drying time. That is why the Proctor chilling machine is designed and built to such precision specifications. Ribbons formed by this chilling machine *are uniform* in every degree. In the dryer—which combines with this chilling machine to form the Proctor automatic flake soap system—uniform circulation of heated air is maintained through the bed of soap and across the entire width of the conveyors. The speed at which the conveyors move and the temperature within the dryer can be regulated to suit the characteristics of the type of soap being handled. Combining the work done by the Proctor chilling machine and the dryer, it is easy to see the reasons behind the dependable performance of this Proctor system. Write today for the latest booklet on this system.

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suitable. These are made by Stevens-Adamson, Jeffrey Manufacturing Company, and Link Belt Company, respectively and possess the advantages of being simple in construction and utilizing much less space than a bucket or spiral conveyor. The supporting structure requires from one-fourth to one-half the usual space. They have high capacities at low power costs, operate at full or partial loads around curves, agitate the material but gently, are dustless, and are practically self-cleaning and self-feeding. The construction problem is simplified by the use of these types. They are built in a wide range of sizes and may be used to handle coal, sugar, soap chips, powdered insecticides, talc and similar materials.

Pneumatic conveying systems are becoming increasingly popular because they possess certain advantages over the mechanical type. They usually cost less to install and operate. They are very convenient where flexibility is desired as they go around and through obstructions very readily. Space is saved, they are dustless and self-cleaning. Pneumatic conveyors, as the name implies, operate by air either under vacuum, pressure or a combination of the two. They are valuable for unloading or loading bulk chemicals in or out of cars, trucks or boats. Portable types are available in many sizes. Coal and ashes are readily handled by them. We recently watched the unloading of trucks of cotton seed which had to be stored in various distant locations. It was spectacular to note the ease and rapidity with which the pneumatic truck unloader handled this operation. The particular installation had replaced a mechanical set-up which operated from a sunken bin into which the seeds had been dumped. While the new installation was costly, we were told that it paid for itself in half a year.

It is good policy in contemplating conveyor installations to study carefully the technical literature that is available on the subject. Among some that has recently come to our attention is that issued by these companies:

Brady Conveyors Corporation, Chicago 4, Illinois; Jeffrey Manufacturing Co., Columbus, Ohio; Lamson Corporation, Syracuse, N. Y.; Link Belt Company, Chicago 1, Illinois; Sprout Waldron & Company, Muncy, Pa. and Stevens-Adamson Company, Aurora, Illinois.

These companies, as well as others, issue valuable literature on conveyors. We have been able in an article of this sort to point out but a few of the uses for conveyors. By more careful consideration of specific plant problems many ways are evident in which plant economies can be obtained by the proper adaptation of conveyors.

Automatic Material Racks

IN MANY of the smaller plants, it is customary to store various packages in trays. The filling of bottles or cans on semi-automatic fillers is an example. This type of operation involves slow downs, back strain and often results in accidental spillage when the loaded trays are manually lifted and carried from place to place. To speed up production and facilitate easier handling, the American Machine & Foundry Co., New York, has devised automatic material racks. These automatic spring powered racks or trays hold a visible bank of material and bring each piece to the operator's hand level as soon as the preceding piece has been removed. To reload the racks, the material is placed on a platform where it finds its proper level through the activation of self-contained springs without any outside power. The trays serve a three-fold purpose—they handle materials, they provide storage, they act as a transporting unit.

Floor Cleaning Machine

TO THOSE who are interested in the cleaning and care of factory floors, the improved floor machine offered by John Herr Mfg. Co., Philadelphia, is of interest. These machines may be used for scrubbing or polishing. They are easily operated by electric power and simplify the cleaning and care of all types of floors. Even the filthiest of floors is thoroughly cleaned with a minimum of effort.

Speed Reducer Bulletins

A new variable speed reducer having a range and output speed of 20 to 1 was recently announced by Lombard Governor Corp., Ashland, Mass. An illustrated 4-page folder, VRS-23-18, gives information about the new speed reducer, pointing out the wide output speed range, the use of ball bearings throughout, and giving other information regarding design, construction, and speed adjustment. The Lombard reducers are available in sizes for between 2 and 15 HP.

Cosmetic Industry History

A new book entitled "History of the Cosmetic Industry in the United States," prepared by Gilbert Vail under the direction of the committee on historical data, The Toilet Goods Association, Inc., New York, was released in August. The 140-page book is well-written and relates in an interesting manner the story of cosmetics in America.

Although the book does not serve as a reference text on the industrial growth and integration of the various companies as we know them today, it does cover in detail the lavish use of cosmetics in the colonial days and points out the reasons for the trend away from such use, which took place through the latter part of the nineteenth century and extended up until quite recent times. The book deals more with personalities, customs, styles and cosmetics of the early days, and the great growth of the industry that has taken place during the twentieth century is touched upon only lightly.

Very little mention was made of soap as such in the first part of Mr. Vail's book, but the suspicion of the term: "wash balls," used by the colonials, was finally confirmed as meaning—soap. Of interest is the place soap-making held in the early days of our country. Judging from the lists of merchants who plied their trades at that time, the art of soapmaking, like midwifery, was relegated mostly to the women, for the only references on the list to soap-making were such as these: "1747 — Widow Lawrence, soap maker," "1756 — Elizabeth Franklin, soap maker and tallow chandler. She was the sister-in-law of Benjamin Franklin." "1772—Mrs. Sheaffe, man-

ufacturer of soaps and hair powder." John Jules Sorge, a jack-of-all trades in 1755, claimed to have a "soap liquor, of which take 10 or 12 drops, and put in a cup of water, and you will have sufficient suds to wash or shave yourself." Another of Mr. Sorge's specialties about in the same questionable category was a "remedy to take the hair out of ladies' foreheads and hands, without pain."

It is small wonder that the soap business gained little headway until the middle of the nineteenth century for the morning's toilet of shaving, rouging, powdering of face and wig and finally the optional application of patches of small black silk cut into various designs served the colonial gentleman for twenty-four hours. With the lady of the era, the situation was even worse: the dressing of her hair was undertaken as infrequently as once every three to nine weeks in summer and at longer intervals in winter. And the "opening of a lady's head" after a month to exterminate the vermin was the only cleaning it got.

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German Insecticide Report

A report titled "Organic Chemical Intermediates for Insecticides, Fungicides and Rodenticides" prepared by the Office of Military Government for Germany (FIAT Report 949) and reported in an earlier issue as available from the Office of Technical Services, Department of Commerce, Washington, contains many interesting points and descriptions on the manufacture of various organic chemicals used by the Germans for intermediates. The report is divided into three parts: (1) insecticides, (2) fungicides, and (3) rodenticides and the details on preparation are accompanied in most cases by data on materials, equipment and energies required for the various processes. Since homologs and derivatives of DDT have been described in previous reports, the material has not been included. Among the products discussed are 1,3,6,8-tetranitrocarbazole, phosphorous-containing compounds such as "Bladan" and "E605" as well as chlorinated sulfones, aralkyls and nitriles.

German Wax Report Issued

Report PB34727, "Economic Study of German Synthetic Waxes," translated by S. S. Cosman and reviewed by P. F. Dewey, has been published with the co-operation of the office of technical services, U. S. Department of Commerce. Part A of the report contains formulae and methods of production of the I. G. Farben Co. waxes. Part B was written by the chemists in the Oppau Werke and describes the production and application of all I. G. waxes manufactured there. Copies may be obtained from P. F. Dewey, 1516 Spencer Ave., Wilmette, Ill. 31 pages. Price $10.00 per copy.

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New Coding Machine

A new coding machine known as the "Cartoncoda," which automatically imprints flat folding paste end or tuck end cartons, cards, and tags, was announced in September by Adolph Gottscho, Inc., New York. The new machine is said to mark as many as 4500 cartons per hour and is adjustable to accommodate various sizes of cartons. It can be operated by one unskilled operator and has a new stack-to-stack feature. The infeed magazine accommodates a stack twelve inches high — approximately 300 pieces of average thickness. When operating, a single carton is automatically ejected onto a conveyor belt and is transported to the imprinting section where it is marked and deposited on an endless belt moving in the opposite direction. This conveyor stacks the marked cartons at the same end of the machine serviced by the operator.

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Bottling Engineer Book

A new edition of the "Bottling Engineer Handbook" is now available, prepared by the engineering department of the U. S. Bottlers' Machinery Co., division J, 4015 N. Rockwell St., Chicago. The handbook is designed to familiarize manufacturers of liquid and semi-liquid products with the economic advantages of various types and designs of machines developed by the company for washing, air drying, and filling the various types of containers. It covers the uses of hand operated, semi-automatic and completely automatic machines.

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Another Chlordane Folder

Another bulletin on chlordane was released by Julius Hyman & Co., Denver, during August. The newest Technical Supplement, No. 204, gives indication of the general effectiveness of the company's trade name chlordane product "Octa-Klor" and states that 2 per cent of chlordane in a suitable base is recommended for residual control of most household, institutional and industrial insects.

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Guide to Shipment Sealing

A handy guide to more efficient shipment sealing and tape application has just been published by Better Packages, Inc., Shelton, Conn., manufacturers of sealing tape machines and label and envelope moistenners. Covering the subject of sealing as applied to corrugated shipping containers and parcel post packages, the booklet emphasizes the importance of protecting the product in transit and points out the advantages of gummed tape as a closure method. The achieving of a pilferage prevention seal with gummed tape is demonstrated.

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New Water Treat Booklet

A new technical bulletin on water treatment is being offered to chemists and engineers responsible for water supply problems in industrial plants, water supply departments, power stations and ice plants. Containing 94 pages, this bulletin has sections on softening, purification, taste and odor removal, corrosion control, boiler feed water treatment, the use of alkalies, chlorine and other chemicals and equipment, as well as lists of standard reference works on many of the subjects covered. The chapter on soap consumption is of particular interest to the soap industry.

This new bulletin is Technical and Engineering Bulletin No. 8, "Alkalies and Chlorine in the Treatment of Municipal and Industrial Waters," and is available from the advertising and sales promotion department, Solvay Sales Corp., 40 Rector St., N. Y.

German Oilseed Industry

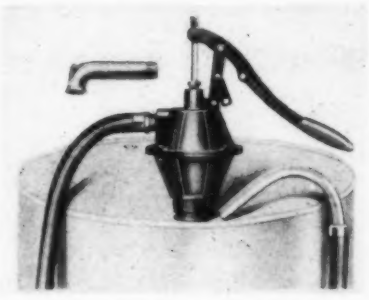
A new book "The German Oilseed Industry" by Warren H. Goss, was recently offered by Hobart Publishing Co., Washington, for $17.50.

German manufacturers' claims that their soybean oil retains its flavor stability and is not subject to "reversion" under normal storage conditions for long periods merit the attention of the American fat and oil industry, according to Dr. Goss. That the Germans have solved the problem of reversion in soybean oil could not be determined conclusively, Dr. Goss states. It was impossible to obtain samples since soybeans were not available during the war in Germany, and some of the information volunteered by German technicians conflicted. However, enough convincing data was obtained to warrant careful study by American manufacturers.

Dr. Goss, formerly a research scientist with the U. S. Department of Agriculture and now assistant technical director of Pillsbury Mills, Inc., Minneapolis, made an extensive study of the oilseed industry in Germany shortly after the termination of hostilities under the sponsorship of the Office of Technical Services, U. S. Department of Commerce. Dr. Goss has revised, expanded, and consolidated 39 original reports into one volume.

New Insecticide Law Book

A new Compilation of Economic Poison Laws has been issued to its members by the National Association of Insecticide & Disinfectant Manufacturers. The new book which comprises 550 pages includes all state and federal insecticide acts and economic poison laws in full with regulations covering enforcement, list of all enforcement offices, a chart showing basic requirements of each state, and rulings on interpretations of various laws. The book is loose leaf form divided according to states, including U. S. laws, Canada, and American territories, and will be kept up to date with annual corrections and additions. The work was compiled by John D. Conner, Washington attorney and general counsel for NAIDM, and publication was directed by H. W. Hamilton of the Koppers Co., NAIDM secretary. A limited number of copies are available for sale to non-member firms, information about which may be obtained direct from the NAIDM office at 110 East 42d St., New York.



Utilizing the diaphragm principle, this new hand pump, supplied by General Scientific Equipment Co., Philadelphia, pumps light liquids from drums and barrels at the rate of fifteen gallons per minute. It requires no priming, has no leather and rotating parts to wear out, and screws directly into the drum, no separate bung bushings being required for 1½- and 2-inch drum openings. A lift of the handle allows liquid to drain back into the drum and an automatic seal prevents evaporation. It is priced at $14.25, including an 8-foot grease hose with static wire, nozzle, and features a special suction pipe for drums having a ¾-inch opening.

Offers Portable Conveyor

A portable power conveyor system which can be set up or disassembled quickly to handle loads up to 100 pounds per foot was recently developed by Food Machinery Corp., Riverside, Calif. It is said to combine the flexibility of portable conveyors with the ruggedness and dependable performance of fixed conveyor systems. The basic power unit is made up of a standard 10-foot straight section powered by a 0.5 h.p. slow speed motor. This unit combines with various accessories and with the accordion gravity conveyor.

Issues 'Pestmaster Progress'

A new publication "Pestmaster Progress" was recently issued by Michigan Chemical Corp., St. Louis, Michigan, which will give information, from time to time, on the control of household and agricultural pests. The paper discusses the "Pestmaster" 40 per cent DDT colloidal dispersion offered to industrial and farm users.

New Elkay Catalog

Elkay Products Co., New York manufacturers of sanitary chemicals and moth preventives, announced recently the completion of their 1947 sanitary chemical catalog for the wholesale trade. Among the products discussed are paradichlorobenzene deodorant blockets, crystals and nuggets, perfumed "Wizo" brand deodorant crystals and blockets, hanging blocks and deodorizing crystals. Also described is "Di-fume" cedarized spray with 5% DDT, "Qizo" brand rat and mouse glue pads, and moth products. In addition to these products, the catalog lists Hudson electric and hand sprayers as well as a number of Geigy insecticides and compositions.

DDT Insecticide Folders

Illustrated folders containing detailed information on the correct application of DDT insecticides in the home are now available from Michigan Chemical Corp., St. Louis, Mich. Folders are offered describing "Pestmaster" colloidal dispersion DDT, a creamy liquid that mixes readily with water to form a practically odorless residual spray, according to the company. The folder on insecticides for home use gives information regarding the use of "Pestmaster DDT" for control of flies, mosquitoes, cockroaches, and bedbugs. Folders on agricultural insecticides are also available.

Digest of DDT Articles

The third digest of the literature on DDT (Jan.-June 1945) was recently published in booklet form by the Agricultural Research Administration, Bureau Entomology and Plant Quarantine, U.S.D.A., Washington. The booklet contains over 160 pages and also offers information on toxicity, solvents, formulations, and effect on plants.

German Detergent Practice

A report based on an interview with Dr. Hans A. Kind, Bohme Fettchemie & Henkel & Cie., Dusseldorf, prepared by OTS and published by Hobart Publishing Co., Washington, offers information on German laundries and detergents.

PRODUCTS AND PROCESSES

Superfatted Soap

The most comon superfatting agents in soap are lanolin and petrolatum. Up to 2 per cent will have little effect on the lathering properties, while 4 per cent will reduce them only slightly. It is possible to prepare a kind of cold cream, mix this with the perfume, and add the mixture to the soap during the milling process. Such a concentrate may be prepared according to the following formula:

	parts
Lanolin	10
Petrolatum	10
Water	10

The water is slowly added to the melted fat mixture at about 50° C. and stirred until the cream becomes cold. The perfume is mixed with the waxes before the water is added. The resulting creamy emulsion may not be completely stable, but this is not important as long as it is stable during the time it is being added to the soap during milling. S. Alperin. *Am. Perfumer* 50, No. 2, 167-72 (1947).

Pretreats Fatty Acids

Animal fatty-acid stocks are conditioned prior to solvent separation so that good filterable crystal fractions of stearic and palmitic acid are obtained. The fatty-acid stocks are blown with air for a period of 5-20 hours at a relatively low temperature until the neutral fat content of the stock increases to a value within the range of 0.2 per cent by weight of the stock to about 3.5 per cent. L. D. Myers and V. J. Muckerheide, to Emery Industries, Inc. U. S. Patent No. 2,421,157.

Methods of Cleaning Metal

A satisfactory agent for cleaning metal to eliminate oil film and dirt must have good wetting action, usually obtained by use of a synthetic wetting agent. Emulsification is also necessary to prevent the redeposition of oil, and this property should carry over into the rinse. Fatty acids should be saponified, and deflocculating action is important in removing solid dirt. Buffers may be required to keep the pH at the proper value, and water-softening chemicals are frequently used with the cleaners. For acid cleaners, inhibitors may be necessary. Temperature and agitation are important factors in metal cleaning. B. B. Button, Jr. *Southern Power & Ind.* 65, No. 6, 55-7 (1947).

Cosmetic Soap

Egg yolk or yolk and white are suspended in chloroform or glycerine and added to the soap mass immediately before it passes through a soap-milling machine. D. Cauchaner, British Patent No. 569,106.

Making Colored Soap

Nontransparent colored soap is produced by incorporating in the soap at any stage, in addition to the usual coloring matter, a small proportion of a blue-fluorescent substance such as umbelliferone or its derivative. This addition imparts a brighter appearance to the soap. Lever Brothers & Unilever Ltd. and P. W. Tainsh, British Patent No. 575,406.

Fat-splitting Agent

A mixture of terpenes, resin acids such as abietic, and phenols is sulfonated and the sulfonation product is used as an emulsifier in splitting fats. G. S. Petrov, U.S.S.R. Patent No. 65,887.

Metal Cleaner

A concentrated metal-cleaning composition which may be diluted, includes phosphoric acid and a water-soluble, nonionic emulsifying agent consisting of a polyethylenic compound having a hydrocarbon group at each end of the molecule. Am. Chem. Paint Co. British Patent No. 571,976.

Detergent Preparation

Straight-chain monoölefins having 12-24 carbon atoms, are caused to react in a liquid state with a gaseous mixture of sulfur dioxide and chlorine. The sulfonyl chlorides thus obtained are hydrolyzed with boiling water or aqueous alkaline solutions into aliphatic sulfonates with unusual emulsifying, detergent, foaming, and other surface-active properties. John Ross, to Colgate-Palmolive-Peet Co., U. S. Patent No. 2,420,383.

Germicidal Rinse

A solid germicidal composition has satisfactory stability for a long period even when stored under conditions of high temperature and humidity. It will also retain its strong germicidal action in the presence of alkaline detergents in the rinse solution. The essential ingredients of the rinse are *N*-chlorohydantoin and an acidic buffer capable of maintaining the rinse solution at a pH of 2.0-6.5, and preferably 3.5 to 4.5. The mixture contains 1 part of 1,3-dichloro-5,5-dimethyl hydantoin, 1 part of 5,5-dimethyl hydantoin, 2 parts of sodium lauryl sulfate, and 10 parts of monosodium phosphate. Such a mixture in rinsing water kills bacteria and is especially suited to rinsing cooking and eating utensils. F. T. Peters, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,422,255.

Metal Soap Preparation

A finely ground fatty acid is added to an aqueous solution of a salt or a hydroxide of a multivalent metal. The mixture is heated to a few degrees below the melting point of the acid, kept at this temperature with constant stirring for 1-2 hours, and then heated to boiling. After a short boil, the metal soap formed is filtered, washed, and dried. A. A. Trapeznikov. U.S.S.R. Patent No. 66,893; through *Chem. Abs.*

Plastic Detergent

A plastic detergent based on clay contains clay of the bentonite type mixed with water, a foaming agent such as a naphthalene sulfonate, and a hygroscopic compound such as glycerine. The mixture is hydrated in a moist atmosphere. W. J. van Lindonk. Dutch Patent No. 58,336; through *Chem. Abs.*

NEW PATENTS

Conducted by

Lancaster, Allwine & Rommel

Registered Attorneys
PATENT AND TRADE MARK CAUSES

402 Bowen Building,
Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,424,860, Insecticidal Compositions, patented July 29, 1947 by Alva V. Snider, Richmond, and John L. Van Winkle, Berkeley, Calif., assignors to Shell Development Company, San Francisco. An insecticidal composition comprising a mineral oil and a compound selected from the group consisting of unsaturated and saturated aliphatic and alicyclic monooxime esters of aliphatic carboxylic acids.

No. 2,425,185 Insecicidal Composition patented August 5 1947 by Vernon E. Haury, El Cerrito, Calif., assignor to Shell Development Company, San Francisco, Calif. An insecticidal composition comprising pyrethrum and an N-cyclo-substituted cyclo-olefinic imine having the imino nitrogen atom linked between two ring carbon atoms.

No. 2,425,238, Fumigant Mixtures of Ethylene Bromide and Methylene Chloride, patented August 5, 1947 by Fred W. Fletcher and Eugene Kenaga, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich., In a method for fumigating insect infested grain stored in bins, the step of introducing a volatile fumigant comprising as a major toxic ingredient a solution of from 2.5 to 20 per cent by volume of ethylene bromide in methylene chloride at the top of the bin and onto the surface of the stored grain.

No. 2,425,311, Composite Cream Which, When Applied to the Skin, Forms a Protective Coating Against Flashburns, patented August 12, 1947 by Gordon Brown Fauley, United States Navy, and Andrew Conway Ivy, Chicago, Ill. A protective ointment containing about 20 to 35 per cent by weight of a volatile solvent, about 10 to 20 per cent by weight of a water insoluble film forming ingredient, about 2 to 10 per cent by weight of a plasticizing ingredient, about 5 to 10 per cent by weight of a water insoluble metallic soap, about 1 to 5 per cent by weight of a chemical light filtering compound, about 25 to 50 per cent by weight titanium dioxide, about 0.1 to 3 per cent by weight of a wetting agent, and about 1 to 5 per cent by weight of a neutralizing ingredient, said ointment being characterized by the ability to protect the skin from burns and frostbite.

No. 2,425,530, Insecticide, patented August 12, 1947 by Edward Harvill, Yonkers, N. Y., assignor to Boyce Thompson Institute for Plant Research, Inc., New York. A contact insecticidal composition comprising piperine and pyrethrin in a liquid spray base of petroleum origin.

No. 2,425,677, Fungicidal Compositions, patented August 12, 1947 by Wilbie S. Hinegardner, Niagara Falls, and Norman D. Scott, Sanborn, N. Y., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. A fungicidal composition comprising a mixture of paraformaldehyde and sym.-trichloroaniline.

No. 2,425,678, Fungicidal Compositions, patented August 12, 1947 by Wilbie S. Hinegardner, Niagara Falls, and Joseph Frederic Walker, Lewiston, N. Y., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del. A fungicidal composition comprising a mixture of paraformaldehyde and a dihydronaphthalene.

No. 2,426,214, Insecticidal Oil Spray, patented August 26, 1947 by Charles K. Hewes, Los Angeles, Calif., assignor to Richfield Oil Corporation, Los Angeles, Calif. An insecticidal composition, including an insecticidal kerosene fraction of mineral oil and an aluminum salt of the group consisting of aluminum stearates, aluminum palmitate, and aluminum oleate, the aluminum salt being mixed with a member of the group consisting of lower boiling alcohols, glycol, and glycerine.

Agent for Emery Process

Blaw-Knox Company, Blaw-Knox, Pa., has been appointed by Emery Industries, Inc., Cincinnati, as exclusive licensing agent for the foreign market of the patented Colgate and Emery continuous fat splitting process.

The process is continuous and automatically controlled. Counter-current flow through the reaction column and internal heat exchange are said to result in steam economy and to give a reaction efficiency as high as 98%.

Blaw-Knox is also to supply, both in the United States and abroad, complete plant units incorporating this process, including all equipment, piping, instruments and buildings ready for operation.

New Corrosion Inhibitor

A new corrosion inhibitor, "Steelyfe 11," for steel and other ferrous metals was recently announced by Bee Chemical Co., Chicago. The active ingredient in the new product is the salt of an alicyclic sulfonic acid. It is said to give special protection against corrosive sulfate ions. The product is a thin, dark liquid having a flash point of about 105° F. and can be applied by dipping, brushing, or spraying. Upon evaporation it leaves a soft coating which is transparent and thus permits inspecting and measuring. The coating can be readily removed by wiping or with degreasers even after standing for several years. For most important protection jobs, one part of "Steelyfe 11" is added to 6 to 12 parts of Stoddard Solvent.

New York Chemical Show

Post-war progress in the chemical industry will be a significant feature reflected in the exhibits at the 21st Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 1-6. A marked trend is indicated in the development of materials and units of all types designed to meet difficult operating conditions, notably in the way of very high pressures and temperatures and powerful corrosive effects. The exposition will be one of the largest of its kind ever held, with displays of industrial chemicals, chemical products and supplies of many kinds, in addition to the wide range of equipment specifically designed for the process industries. Many new developments in laboratory equipment are expected to be shown.

serve as barometer years for comparisons of post- and pre-war conditions. Per cent change in gross selling value of the products at the works shows a gain of 12 per cent from 1944 to 1945 and of 100 per cent from 1938 to 1945. The boost in total costs, including wages, power and materials was from a total of $12,540,000 in 1938 to $24,889,000 in 1945,—again a 100 per cent increase. Even the individual cost items themselves showed the same percentage increase.

In table 2, figures comparing 1944 and 1945 show a greater increase in the selling value of washing compounds as compared with soaps, as might have been expected when soap-making materials went into short supply.

There was an increase in the tonnage of fats and oils used from about 152,422,000 pounds, valued at $10,231,000 in 1944 to 169,261,000 pounds valued at $11,344,000 in 1945. Costs at the works for the other prin-

TABLE 7
Imports Into Canada and Exports of Soaps, 1944 and 1945

	1944		1945	
	Quantity Pounds	$	*Quantity* Pounds	$
(a) Imports—Castile soap	7,625	2,880	3,341	1,149
Common or laundry soap	2,910,351	224,652	2,884,502	227,943
Harness soap	...	...	...	...
Liquid soap	22,906	4,750	142,913	20,980
Soap powders and powdered soap	18,870	2,876	251,209	30,361
Toilet soap	...	45,588	...	96,784
Whale oil soap	17,680	1,441	18,713	1,227
Soap, other, including pumice, silver and mineral soaps, sapolio, etc.	...	10,383	...	27,004
Total Imports	...	292,570	...	405,448
(b) Exports—Toilet soap	2,579,343	586,254	4,443,805	693,327
Soap, other	7,880,148	881,467	37,899,069	3,280,594
Total Exports	10,459,491	1,467,721	42,342,874	3,973,921

cipal supplies, including caustic alkali, builders, perfuming materials and containers showed up slightly lower in 1945 as compared with the 1944 figures. The cost for these materials was about $6,956,000 in 1944 as compared with about $6,816,000 in 1945. One of the largest cost items was represented by containers which dropped somewhat in 1945 as shown by the table. Table 3 shows, however, that the total cost of *all* raw materials used in the industry increased by about 5 per cent.

Table 4 offers quite a complete break down on the basis of products made and includes textile and mill soaps in all forms as well as shaving soaps, liquid soaps and soft soaps.

At first thought, a comparison of Table 5, giving sales of soap by the firms principally engaged in soap manufacture, with Table 6 which shows total soap production in Canada in 1944 and 1945, would lead one to believe that production exceeded sales in Canada during 1945. However, the first-mentioned table refers only to that part of the soap, washing compounds and cleaning preparations industry which includes firms reporting these lines as their chief product, whereas Table 6 shows *total* production of the items in Canada, as is explained in the note accompanying that table.

Canadian soap imports were inconsequential in 1945, amounting to only three million pounds of common laundry soap. Canada increased her soap export business in 1945, shipping over forty million pounds of soaps valued at $3,973,921, as compared with only ten million pounds worth $1,467,721 in 1944.

Ask Larger Whale Catch

Geoffrey Heyworth, chairman of the board of Lever Brothers, London, has asked that restrictions be lifted on the whale catch for the 1947-1948 season. By international agreement signed in London in 1944 and renewed in Washington last year, the quota of whales allowed to be caught in any one season was set at 16,000 blue whale units. Because of the current extreme shortage of fats and oils, Mr. Heyworth has asked that restrictions on this year's catch be lifted.

New Waterless Cleaner

Stoll, Graham & Heiderskach, Inc., 4922 W. Division st., Chicago 51, is marketing a new waterless hand cleaner, "No-Ho," said to remove grease, paint, ink, or grime without soap or water.

Starts N. Y. Office

The establishment of an eastern sales office in the Whitehall Building, New York, was recently announced by the chemicals department of Quaker Oats Company, Chicago. Miss Adelia C. Boland, formerly of the Chicago office, will be the chemicals department representative in the New York office which has been opened for eastern users of furfural and the other furan chemicals manufactured by the Quaker Oats Company.

Wool Wax Acids

Much has been done on the utilization of wool wax acids in soap manufacture. Generally speaking, it has not been possible to incorporate wool wax acids into household or textile soap where detergency is of main importance. Soda soaps of these acids are only very slightly soluble in cold water. They possess a remarkable transparency when made up into bar soap—similar to castor oil soap. On standing in a dry atmosphere this soap loses moisture to give a very hard waxy material with little tendency to crack.

The potash soaps of these acids are stated to dissolve readily in cold water, which, even if moderately hard, does not precipitate lime soap, at least for several hours. A 50 per cent hydrous soft soap made up with the potash soap of wool wax acids, has been found to remain translucent, soft, and viscous, without "figging" for several years. This is unlikely to be the case with any normal fatty-acid mixture. The average molecular weight of combined wool wax acids is put at about 360, the average iodine value 15, and average titre 52° C.

The ammonium, potassium, sodium, and triethanolamine soaps of these acids are used largely in the preparation of commercial oil-in-water emulsions. Wool-wax acid derivatives which find application directly as emulsifiers or washing agents, or which serve as intermediate products for the manufacture of these, and are soluble in benzene, alcohol, and hydrochloric acid, but not in water, are obtained by reaction with diethylene triamine and methylene tetramine. E. S. Lower, *The Industrial Chemist 23*, 274-7 (1947).

Flow Properties of Soap

The flow properties of anhydrous sodium stearate were determined over the range of 45-140° C., by use of an extrusion plastometer. Large changes in the properties were found at 68° and 105°. An abrupt change was also found when the number of carbon atoms in the soap was reduced below 8. Flow-pressure curves are plotted for both pure and technical sodium stearate at various temperatures. Also changes in mobility and yield with temperature are plotted. The changes are attributed to loosening of the crystal bonds in one dimension and the consequent provision of easier slip planes. The results and plot of the yield value with change in the number of carbon atoms of sodium soaps indicates the increasing strength of the nonpolar crystal bonds as the hydrocarbon chain is shortened. F. W. Southam and I. E. Pudington, *Can. J. Research 25B*, 125-31 (1947).

Surface-active Agent Bases

Starting materials for making surface-active agents are boric or phosphoric acids. They are esterified with a higher alcohol. One or more of the free hydroxyl groups of the inorganic acid is coupled with an aliphatic hydroxysulfonic acid or aminosulfonic acid, followed by neutralization. N. V. Chemische Fabriek Servo and M. D. Rozenbroek, Dutch Patent No. 56,089; through *Chem. Abs.*

Grease from Garbage

A method of garbage reduction for further use is described. Hotel garbage was treated in batches of 50,000 kilograms each. Grease production averaged 8.4 per cent. W. A. Bush, *Sewage Works Eng. 18*, 248-51 (1947).

Petroleum Alkyl Sulfate

A process called the van Andel process starts from hitherto unused residues left from the manufacture of lubricating greases. A fraction distilling at 160-310° C. contains a large proportion of olefins. Appropriate treatment with sulfuric acid permits the production of sulfo-oxygenated soaps comparable in value to soaps now on the market. The new products have the same colloidal properties. Their general formula is RSO_3Na (sulfonate) or $ROSO_3Na$ (sulfate) or a mixed formula. These products are so soluble that 35 per cent aqueous solutions may be formed. They can be used as detergents in hard water or in sea water. E. Lemaire, Genie civil *122*, 27-9; through *Chem. Abs.*

Ultrasonic Waves

The effect of ultrasonic waves on oil varies with the condition of the oil. With refined seed oils, as well as with pure oleic acid, a decrease in acid value was always observed. But with raw olive oils in some cases a decrease was found, more often an increase occurred, and in one case no change took place. It is suggested that work is needed along this line in connection with the study of changes occurring in rancidity development in oils. S. A. Kaloyereas, *J. Am. Oil Chemists' Soc. 24*, 283-4 (1947).

SANITARY PRODUCTS

A SECTION OF SOAP

AS ONE state and municipality after another drives to clean up its eating and drinking establishments, reports of investigations reveal a wide range of generally insanitary conditions. Topping off reports of bad conditions from several cities, comes the investigation in Massachusetts which showed that only seven per cent of eating places there meet the state requirements for sanitation. Dirty equipment, poor dishwashing, insect and rodent infestations were a few of the more common violations of the sanitary code. That this and other revelations of bad sanitary conditions in eating and drinking places are the forerunner of campaigns to clamp down on such establishments is quite generally known.

That the steady pressure of public health officials in all parts of the country makes the operators of these establishments more inclined to spend money for the necessary sanitation materials is quite obvious. A concerted drive to expand sanitary chemical sales in advance of action by public authorities is, we feel, extremely logical at this time. The sales approach is quite apparent,—do the job before the inspector gets there. The industry would do both the public and itself a noteworthy service by turning on the sales "heat" right now in this direction.

IN undertaking mosquito and fly control as a public health measure, some state and other public officials appear to have gone rather far afield in their operations. With the contention that the widespread use of DDT is a helpful step along the path toward eradicating disease-carrying insects, there can be little quarrel. Entomological and medical experience of the past five years undoubtedly lends support to such public health programs. But it seems to us that when the application procedure goes beyond the spraying of large public areas and extends to private homes, barns, and other premises, the program has gone further afield than anything originally intended.

Insect control at government expense within the confines of private homes except in the case of epidemics or other emergency does not seem to us to be exactly in keeping with the American way of doing things. During the 1947 season, there were actually hundreds of brands of effective insecticides on the market in areas treated with DDT,—mostly in the south and midwest,—and no reasons which we can see why they should not have been purchased for private use. Why should a government agency supply insect control service for private premises any more than repair a leaky roof or heat a house?

Insecticide manufacturers contend that these government operations have certainly not aided the sale of their products during the past season, and have tended to make a poor season even worse. We feel that they have a just complaint. Some method should be found to protect their interests against what is eminently unfair competition, some method possibly of putting the business through local companies even though the insecticides may be supplied actually by a distant manufacturer.

STILL most important to the household insecticide industry, particularly that branch of it merchandising small package lines, is how to move accumulated stocks off retail shelves as early as possible. Unless this be accomplished, early selling by manufacturers in 1948 is bound to meet continued resistance. There are those who feel that the manufacturer can do nothing about it, that his only hope is plenty of bugs early in the season next year. But there are those who believe otherwise, who believe that right selling and advertising can break the log jam. A thorough going over of this subject at the NAIDM meeting in December may bring out some interesting revelations.

BEER CANS for A

Expanded market seen for low pressure aerosol insecticides as a result of decision of the ICC to permit use of beer can type containers . . . the case for aerosols in the pressure range of 35 to 40 psig at 70° F. is presented

By W. W. Rhodes
Chairman, Aerosol Committee
Compressed Gas Manufacturers' Association, Inc.

ON July 28 the Interstate Commerce Commission in Docket 3666 amended section 302 of Freight Tariff No. 4 by the inclusion of paragraph (f), which reads as follows:

> "(Add) (f) (1) Inside non-refillable metal containers charged with a solution of materials and compressed gas or gases, which is non-poisonous and non-inflammable. Authorized as follows:
>
> "(Add) (f) (2) Capacity not to exceed 30 cubic inches (16.6 fluid ounces).
>
> "(Add) (f) (3) Pressure in the container not to exceed 55 pounds per square inch absolute at 70° F.
>
> "(Add) (f) (4) Liquid content of the material and gas must not completely fill the container at 130° F.
>
> "(Add) (f) (5) Each completed container filled for shipment must be heated until content reached a minimum temperature of 130° F without evidence of leakage, distortion or other defect."

This amendment to Freight Tariff No. 4 permits in practice the use of a tin can of any type of construction, provided the can does not exceed 30 cubic inches in size and the aerosol solution contained in the can does not exert a pressure of more than 55 pounds absolute (40 psig) at 70° F. nor completely fill the can at 130° F. Further, these cans must not show evidence of leakage, distortion, or other defect when the aerosol content is heated to 130° F., and every one of these cans must be tested at that temperature before transporting from the place of manufacture.

Ordinary cans used for food canning will not pass these specifications but the so-called "beer can" made by all the major can companies will pass the specifications with an acceptable margin of safety.

No safety devices are necessary in connection with these cans.

It is generally conceded that the pressure of 25 psig at 70° F. is too low a pressure to permit the making of a satisfactory aerosol. Good "low pressure" or, rather, "moderate pressure" aerosols may be made in the pressure range of 35-40 psig at 70° F., and it is felt that the target in plant operations will be either 37 or 38 psig at 70° F., thereby permitting a manufacturing variation of 2 to 3 pounds pressure which will allow of elbow room in the manufacturing process.

There are some who in their enthusiasm for the valves that they have designed believe that good aerosols can be made at 25 psig, but most of the industry is skeptical of such claims. It is undoubtedly true that valve design influences particle size and there is a distinct difference in the effectiveness of individual valves.

Dr. Lyle D. Goodhue, the originator of modern aerosols, at one time during the course of his research held the opinion that aerosols below a pressure of around 50 psig at 70° F. might not be effective. However, like all capable scientists, that was his opinion at a specific time and through further research he found that remarkably efficient aerosols could be made at pressures of 35 to 40 psig at 70° F. and that in this pressure range the aerosols were much more effective than at 25 psig at 70° F.

During the proceedings of the Aerosol Committee of the Compressed Gas Manufacturers' Association Dr. Goodhue submitted a very able paper to the Aerosol Committee of C.G.M.A., advocating aerosols in the pressure range of 35 to 40 psig at 70° F. This paper is a matter of record in the Aerosol Committee and it is the writer's feeling that it should be published in the interest of the industry. It is quoted on the facing page.

It now seems certain that during 1948 large numbers of beer cans containing 12 to 13 ounces of aerosol will come on the market. If the toxicants in these containers are able to assure a high knockdown and kill, the market will be considerably expanded at a reduced price to the consumer.

AEROSOL DISPENSING

A statement submitted to the Aerosol Committee of the Compressed Gas Manufacturers' Association advocating complete exemption from control by the Interstate Commerce Commission of low pressure light metal aerosol dispensers.

By Dr. L. D. Goodhue
Phillips Petroleum Co.
Bartlesville, Okla.

THE aerosol method of dispersing insecticides has proven to be a very effective and convenient method of applying insecticides. It has met with overwhelming success in the Army and Navy and has found a definite place as a household insecticide. The chief disadvantage is the high cost.

One means of reducing the cost is the use of a lighter container which can be manufactured cheaply by mass production methods. Some reduction in pressure from the original type marketed in ICC-9 and ICC-40 is necessary to permit thinner walled containers. This is possible, and effective formulations with ambient pressures down to 30 psi or slightly lower have been investigated.

Since 25 psi at 70° F. is already permissible, some manufacturers have developed formulas and dispensing devices which, they contend, will give a satisfactory performance. Other investigators have obtained similar results but find a pressure from 35 to 40 psig to be much more desirable for many reasons. The following is a point by point discussion in favor of higher pressure, namely 40 psig at 70° F.:

1. More effective dispersions.

Since pressure varies with temperature, a series of biological tests were run on houseflies to determine the change in effectiveness of a 25 psi at 70° F. formula when the temperature of the bomb is varied from 70° to 90° F. The series was run three times and the averages plotted on log-probability paper. The amount to kill 50% or knock down 50% was determined.

Data on formula containing 5% nonvolatile, 5% semivolatile, 90% liquefied gas is below.

It can be seen from this table that a continuous loss in effectiveness is encountered when the pressure is reduced from 38 to 25 psi. A greater loss is expected at pressures below 25 psi.

A similar series of experiments was run on the same formula with 10 psi increase in pressure. There was no significant change in effectiveness when the temperature was reduced from 90° to 70° F.

Temp.	*Pressure*	*at 50% point*		*Loss in effectiveness*	
F.	*psi*	*g. to Kill*	*g. to KD*	*Kill*	*KD*
70	25	2.1	1.8	61%	38%
80	32	1.7	1.6	32%	20%
90	38	1.3	1.3	0%	0%

2. Operates better at lower temperatures.

It is a matter of fact that a change in pressure causes a change in the operation of an aerosol dispenser. If 35 to 40 psi is used, much more latitude in the ambient temperature is possible. The ejection of a solid stream will not occur even at reduced temperatures.

3. A more simple dispensing device.

No complicated dispensing devices are required that may get out of order or add to the cost of the product. The use of a simple device also prevents one manufacturer from monopolizing the field with a patented trick dispenser.

4. More available energy.

There is 60% more available energy for dispersing the insecticide in a 40 psi than in a 25 psi aerosol. This is calculated on the allowable change in ratio of "Freon-12" to

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Testing Insecticidal Residues

A Micro Method for Biological Testing of Non-Fumigant Type Insecticidal Residues on the Housefly (Musca domestica L.*)

Dr. M. H. Doner and C. V. Anderson
The J. R. Watkins Company

THE testing procedure described in this paper is a means of determining the relative knockdown and killing efficiency of insecticide deposits. A low level of active ingredient per unit area of surface treated (up to 15 mg./sq. ft.) distinguishes the method from other methods which use high levels of deposit per unit of surface (about 200 mg./sq. ft.). By the use of quantitatively low deposits of residue, the rate of inactivation by light and air proceeds quickly, thus making it possible to obtain data on samples during a reasonably short period of time. The method is further distinguished by the fact that, except during flight, the flies are in constant contact with the treated surface.

It is believed that such matters as repellency, information on special formulations and types of surfaces as related to porosity are separate problems that require special attention.

An insecticide is judged according to its immediate effect upon the insect (knockdown) and by its final effect upon the insect (killing power). We cannot always assume that knockdown power is a true criterion of killing power. Therefore, tests to evaluate the speed of action of a spray residue should also include tests to evaluate killing power. This reasoning is based on the belief that tests for residual sprays should be broad enough to include all toxic residues and not be limited to a single toxicant such as DDT.

Determining Knockdown and Mortality

A "DOWN" fly is considered one that is on its back for 10 seconds regardless of future behavior. The time each fly is "down" is recorded. This is continued and the time noted when 50 per cent of the insects are "down." The time for complete knockdown is also recorded.

Mortality, in the dosages employed in the tests, is dependent upon the duration of the exposure period. The loss in toxicity is determined at intervals over a period of time until it is considered to be unsatisfactory. It is believed that the loss of toxicity may be shown more quickly by selecting an exposure period which will result in a 100 per cent kill on the initial date of the test, but which will result in less than 100 per cent kills within a week after application. Future tests will reflect loss of toxicity in a reduced percentage mortality. The exposure periods recommended for powders, emulsions and solutions (reference insecticides) are sufficient to just cause 100 per cent kills on the initial date of the test in the dosages employed. The same exposure period is employed throughout the test, the

* The writers gratefully acknowledge the cooperation of all workers who made their own methods available for study.

results showing a gradual loss of killing power with a standard exposure period. The toxicity of known and unknown insecticides is compared when they lose toxicity to 50 per cent mortality 24 hours after the standard exposure.

Test Insect

FOR evaluation purposes, the housefly (*Musca domestica L.*) is used. Healthy test groups having an average age of no less than 4 nor more than 6 days are used. Individual flies in the test groups are not less than 3 nor more than 7 days old at the time of testing.

Reference Insecticide

BECAUSE of the differing effects of suspensions, emulsions and oil solutions upon the test insects, reference insecticides were established for each of the aforementioned types of residual sprays:

1. Powder suspension (50 per cent DDT)—2.5 per cent DDT in distilled water.
2. Oil emulsion—25 per cent used at 2.5 per cent DDT in distilled water.
3. Oil solution—2.5 per cent DDT.

Apparatus

1. *Testing Panels*—Cardboard blanks 6 inches square are scored and cut so that the edges can be turned upward to form a box one inch high.* The corners are stapled in place. A 6-inch square of glass serves as a cover. The surface may be treated with special paints or varnishes when it is desired to simulate other types of surfaces.
2. *Sprayer*—A special micro atomizer capable of dispersing 1 ml. of Deobase as a fine fog at 5 pounds pressure in 27 seconds, mounted over a settling mist tower. The cardboard panels are treated before folding.
3. *Settling Mist Tower*—A metal or celluloid tube 39½ inches long and 10 inches in diameter. A space of ⅛ inch is provided at the bottom for escape of air and to allow test panels to be inserted for spraying.
4. *Transfer Cone*—Flies are permitted to move from the stock cages into the transfer cylinder through a screen cone fitted over the open end of the stock cage. A metal plate 4 inches square with a ½ inch opening is soldered to the top of the cone as a support for the transfer cylinder.
5. *Transfer Cylinder*—Flies are collected for transfer to the testing cages in a glass cylinder 5¼ inches long and 1½ inches in diameter, fastened into the center of a 4½ inch square of plexiglass. This tube is readily charged with flies from the transfer cone and the flies are easily removed to the testing cages by pushing a cork plunger through the glass tube.

Special Procedures

A. *Powder Suspensions*:
   1. Reference insecticide—2.5 per cent suspension of DDT in distilled water prepared from a 50 per cent DDT wettable powder.
   2. Method of spraying—5 pounds pressure in settling mist tower.
   3. Dosage per panel—0.3 ml. This results in a deposit of 6.24 mg. DDT per square foot or 6.7 micrograms per square centimeter.
   4. Time of drying—30 minutes to 1 hour.
   5. Number of flies—Ten 4-day old flies for knockdown readings, 20 to 30 for mortality determinations.
   6. Number of replicates—4 for knockdown, 4 for mortality.
   7. Exposure period for mortality determinations—5 minutes.

B. *Oil Emulsions*:
   1. Reference insecticide—2.5 per cent DDT in distilled water prepared from 25 per cent DDT concentrate.
   2. Method of spraying—same as above; panels treated with Vinylite resin.
   3. Dose per panel—0.3 ml. resulting in 15.36 mg. DDT per square foot or 16.5 micrograms per square centimeter.
   4. Time of drying—until dry.
   5. Number of flies—as above.
   6. Number of replicates — as above.
   7. Exposure period for mortality determinations—25 minutes.

C. *Oil Solutions*:
   1. Reference insecticide—2.5 per cent DDT in deodorized kerosene, prepared from technical grade DDT.
   2. Method of spraying—as above; panels treated with Vinylite resin.
   3. Dose per panel—0.3 ml. resulting in a deposit of 4.8 mg. DDT per square foot or 5.1 micrograms per centimeter.
   4. Time of drying—as above.
   5. Number of flies—as above.
   6. Number of replicates — as above.
   7. Exposure period for mortality determinations—20 minutes.

Analysis of Data

The testing of insecticide residues by this described method results in knockdown and mortality values reflecting loss in toxicity.

"Knockdown" Values

Two methods of obtaining ratings were employed, both based upon the resistance of the average fly to the insecticide as expressed by the figure showing 50 per cent knockdown.

Method I.—The 50 per cent knockdown values for each test (the time in minutes required to cause 50 per cent knockdown) are plotted on a graph against the dates of testing. The age of the deposit at which 50 per cent knockdown is effected was arbitrarily selected as a point for critical comparison. The insecticide was considered unsatisfactory if a 50 per cent knockdown does not occur within 60 minutes. *Ratings are based upon the difference in time at which the unknown and reference insecticides effect a 50 per cent knockdown at the 60-minute critical point.*

Each day of the testing period was arbitrarily assigned a value of 5 points. Readings of the assigned values are made from the graph at the time at which 50 per cent knockdown occurs in 60 minutes. If 50 per cent

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* An adoption from the method of Dr. Harold Waters and L. K. Brunn of the Ohio State University Research Foundation.


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ALTHOUGH quaternary ammonium products have been making rapid strides in the American market, the traditionally more conservative British have been slower to revise the formulation of their products offered for household antiseptic and disinfectant use, with the result that by far the largest share of market preference in Great Britain still goes to products of a type which have sold for many years. The next major development in the British market for household antiseptics may well be the more widespread marketing of specially compounded cation-active preparations of the quaternary ammonium type. However, the older type products, which will be described below as representative of the materials still enjoying the greatest popularity on the British market, promise to retain their standing in the field for some time to come.

General antiseptics, of the type intended for everyday domestic use, range in number from the cruder sanitary fluids and lavatory disinfectants to those specially compounded for personal applications. Highly specific germicides, however effective for qualified medical use, are not so important or interesting in this particular field as those possessing reasonable potency against a fairly wide range of common micro-organisms, coupled with relative non-toxicity, non-irritancy, stability, and freedom from staining and unpleasant odors.

The chemist who intends to produce a new household antiseptic must be familiar with each of the following branches of technical knowledge: (a) government specifications and other official requirements; (b) the general background of scientific advances in all categories of antibacterial agents; and (c) the constitution, merits and demerits of those general antiseptics already on the market.

Except in the arts of scientific warfare, there is usually an appreciable time lag between the discovery of a scientific principle and its application in practice. While it is probable, therefore, that no widely marketed germicide is yet fully in line with the latest theories and developments in this field —the fact must, on the other hand, be conceded that during the past 20 years we have witnessed a strong swing away from the cruder phenolic types of disinfectant towards a much wider usage of improved non-toxic, non-irritant fluids.

The study of these popular and admittedly superior antiseptics is an excellent practical guide to developing still more effective preparations along similar or related lines. In so far as the United Kingdom is concerned, a repre-

sentative classification is as follows:

1. *the chlorophenol group*, to which belongs a proprietary line that is probably the best seller of all in the United Kingdom, as well as several other popular lines;

2. *the hypochlorites*, containing a well known, stabilized preparation of typically hypochlorite odor;

3. *the phenol/essential oil/alcohol group*, in which there have been some improvements and a general revival of interest;

4. *pine and other essential oil emulsions;*

5. *hydrogen peroxide solutions;* and

6. *coal tar fluids* of the white and black types.

GROUP No. 1 has come well to the fore, and has attained widespread use for gynaecological and general medical purposes, as well as leading the field for personal and domestic applications. Reckitt and Colman's "Dettol" is the pioneer preparation of this type. As noted by Dean and Appleyard (1), the two principal phenols in use are parachlormetacresol and parachlormetaxylenol, these being usually dissolved in an aqueous-alcoholic soap solution. A preparation of this type is included in the current B.P.C. Addendum, Part III.

Two widely sold and justifiably popular examples of this group are stated to be composed as below in formula 1.

According to Monsanto figures, their particular grades of chlorinated xylenols are said to give Rideal-Walker* coefficients of 62-65 when suitably formulated, while their benzyl cresol can give an R.-W. coefficient equivalent to 105 under favorable conditions. Terpineol, a widely used constituent in this type of antiseptic, has a fine "clean" odor, good masking properties and an R.-W. coefficient of 4-6, besides being extremely useful as an aid to solubility of the main active agents. As will be noted, Example B below carries no "passengers" in the team; every item in the formula is there for a definite purpose. In actual fact, the same observation also applies to the less fully disclosed Formula A.

All the formulae of this type are fundamentally quite simple in constitution. The main germicidal agent is the chlorinated phenol, which is usually present in the proportion of 2.5 to 3 per cent of the total. Higher proportions are difficult to incorporate in permanent, clear solution, even with the aid of selected solubilizing agents, while lower proportions tend towards reduced activity. As secondary germicidal agents, such substituted phenols as amyl metacresol and particularly benzyl cresol, find considerable favor. The third group of active agents comprises the essential oils (e. g. steam-distilled pine, ti-tree, eucalyptus etc.) and isolates (e. g. terpineol, thymol, borneol). Considerable attention needs to be given to the selection of this third group, owing to its three distinct but combined functions, viz.—solubilizing action for the chlorphenols; covering or perfuming effect on the somewhat unpleasant "chlorinated" odor; and subsidiary germicidal action which, in the most effective combinations, serves to enhance the qualities of the final composition as a general antiseptic, even though at the expense of its efficacy against one or more specific organisms.

Alcohol is present in the formulae in proportions varying from 10 to 15 per cent. It functions chiefly as a solvent, wetting agent and general aid to homogeneity. Smaller proportions of other, more specialized solvents have also been advocated (e. g. cyclohexanol by Dr. A. Davidson), but in practice these do not appear to be widely used.

The balance of the fluid is made up with about 10 per cent of clearly soluble soap, together with distilled water to 100 parts. Potash-castor oil soap has been widely advocated for this purpose; also potassium ricinoleate prepared *in situ* from caustic potash and ricinoleic acid. Other useful soaps include potassium oleate and linoleate, ammonium and triethanolamine ricinoleates—and, in fact, any good soft or liquid soap base that gives a clear solution in water and a mild action on the skin.

Experimental batches of these popular antiseptics may thus be made up according to the approximate proportions given in formula 2 below. Parts are by weight. In some formulae, up to 10 per cent steam-distilled pine oil (Hercules "Yarmor" type) has been used, and up to 15 per cent ti-tree oil. Terpineol is an excellent all-round aid to clear solubilization and adequate odor-masking, but is not always used. Further suggestions concerning the choice of essential oils and other aromatics, and also the choice of appropriate soaps, are given in the notes on Groups 3, 4 and 5 (see below). The possibility of using alternative surface-active agents, e.g. liquid fatty alcohol sulfates, in place of soaps, is of course deserving of close investigation. The secondary fatty alcohol sulfates derived from petroleum appear to give promise in this respect.

Experimental batches made at the School of Pharmacy of the Glas-

Formula 1.

	Example A	*Example B*
Chlorxylenol	3	3
Terpineol	9	2.5
Other active constituents	not specified	——
Benzyl cresol	—	2
Terpenes	—	7.5
Pine oil, aromatic	—	5.0
Vehicle, to make	100	100

Formula 2.

		Parts
1.	Chlorphenol (e. g. p.-chloro m.-xylenol)	2.5 to 3.5
2.	Benzyl cresol etc.	nil to 2.5
3.	Essential oils (pine, ti-tree, etc.)	2.5 to 5
	Terpineol etc.	2.5 to 10
4.	Alcohol (industrial alcohol or isopropyl alcohol)	10 to 15
5.	Potash/castor oil or other suitable soap	7 to 10
6.	Distilled water, to make	100

* British manufacturers still employ the Rideal-Walker method of calculation of coefficients for antiseptics and disinfectants, which expresses results in figures which will be noted to be considerably higher than comparable coefficients obtained by the F.D.A. method universally used in the United States. It will be noted also that British practice still permits of giving coecffiient ratings on a sliding scale basis (62-65, 4-6) which is not permitted under the F.D.A. method.

gow Royal Technical College were prepared by mixing the essential oils with the chlorxylenol, followed by the industrial methylated spirit; 30 per cent by weight of a clear, neutral-finished potash-castor oil soap solution (based on 7.5 per cent castor oil, B.P.) was then added with continued stirring, followed by distilled water. This method may be suitably adapted for larger batches, and also suitably modified in cases where the soap is formed during the process of manufacture from an alkali or alkanolamine and oleic, ricinoleic or other fatty acids.

Let us now for a moment consider possible improvements in the above type of formula. In the first place, the addition of other germicidal agents of the phenol, chlorinated phenol, or substituted phenol types may be considered, e.g. benzyl cresol (as given), hexyl resorcinol, amyl metacresol; thymol, isothymol; chlorthymol, chlorcarvacrol, etc. It is said that a mixture of chlorcresol and a chlorxylenol possesses an activity greater than can be accounted for by the respective activities of the separate components (1). Chlorcarvacrol has a Rideal-Walker coefficient of 144 and makes an excellent antiseptic in 5 per cent alcoholic solution. In general, these antiseptics as marketed are very good all-round preparations, but they are undoubtedly less active towards *Staphylococci* than against *B. typhosus*. Improvements in efficiency can therefore be anticipated in the direction of incorporating germicides with a specific action against S. *aureus*. Here, again, essential oils such as Spanish hop oil may prove valuable.

To conclude this section, dealing with Group 1, the opinion of Professor Lawrence P. Garrod of London University may aptly be quoted (2): "In recent years a new class of coal-tar antiseptic has come into use, of which the prototype is "Dettol." The active constituent of these is a cresol or xylenol with an added chlorine atom; halogenation approximately trebles the bactericidal power of tar acids but decreases their solubility and involves a greater loss of efficiency in the presence of organic matter. . . . A 5 per cent solution is advisable for treating wounds. This is fortunately feasible, for antiseptics of this class possess little gross toxicity; undiluted Dettol is tolerated by most skins. . . . Such antiseptics do not coagulate proteins, they act with moderate rapidity, and they act in the presence of serum or of blood if used in adequate concentration. Official reluctance to recommend their use in the past has been due to the necessity of making a choice between a large number, every one of which is proprietary."

Incidentally, one proprietary brand claims an R.-W. coefficient of six and carries recommendations ranging from 0.5 per cent dilution (10 drops in half a glass of water) for oral use to 5 per cent (1 tablespoonful to half a pint of water) for cuts, wounds and abrasions.

FROM the halogenated phenols of Group 1, it is but a short step to the older halogen preparations represented by Group 2. In this latter group we shall also consider briefly the intermediate type of preparation that contains both halogenated phenols and uncombined halogens in aqueous solution.

Although the halogens are effective bactericides in extreme dilution in pure water, they nevertheless become almost totally inactivated in the presence of organic material, unless they are present in considerable excess. When used in the hospital treatment of wounds and burns, therefore, their action is maintained by such means as irrigation or controlled immersion.

The advantages and disadvantages of iodine and iodine tinctures as household first-aid applications are too well-known to call for further discussion. Bromine is not used except in traces, but chlorine is still widely employed in the form of sodium and calcium hypochlorite solutions (e.g. *Liquor Sodæ Chlorinatæ*, Javelle water and Labarraque's solution) or as eusol or Dakin's solution. Increasingly persistent activity in the presence of blood, serum and other organic matter is claimed for "Chloramine-T" (p.-toluene sodium sulphochloramide) and Dichloramine T, with maximum efficiency in this respect claimed for Azochloramide (n-n-dichloroazodicarbonamidine). The latter has in fact been sponsored by the British War Office for wound treatment, when employed as a 1 in 2000 solution in buffered isotonic saline or as a 1 in 500 solution in triacetin.

By far the most successful of household antiseptics of the halogen type is one that discloses on its label the following analysis:

	Per cent
Sodium hypochlorite	1.00
Sodium chlorate	0.13
Sodium sulphate	0.15
Sodium chloride	16.50
Sodium carbonate	0.05
Calcium chloride	0.07
Magnesium	trace
Water	82.10

Electrolytically prepared hypochlorite solutions of this kind are justly popular because of their reliability, safety, and superior all-round activity as compared with the older style preparations previously mentioned. Many stock formulae for the latter are, of course, to be found in pharmaceutical textbooks.

It is interesting to note that Thomas H. Leary has described, in the Iowa State College *Journal of Science* (18, 54, 1943), an apparatus for the continuous production of saline sodium hypochlorite solution for antiseptic purposes. Here, as in other branches of manufacture, the patent situation may call for careful attention.

From the housewife's point of view, the hypochlorite antiseptics possess one very definitely objectionable feature: unpleasant odor. Women, in particular, seem to be repelled by the smell of diluted chlorine. The possibility of covering the odor of hypochlorite solutions, and for that matter of chlorinated phenol solutions, is therefore deserving of the most intensive investigation. In this connection there is a certain value to the work carried out during the war by the British National Institute for Medical Research, when the problem was examined of masking the odor of sodium hypochlorite sprays used in air-raid shelters. Effective covering of the odor is said to have been achieved with the aid of two alternative mixtures consisting of 1 gram of either musk xylol or nerolin II (β-naphthol methyl ether, or yara yara) dissolved in 10 mls of

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IN CONSUMER PACKAGED INSECTICIDES

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Increasing Efficiency of

FDA Phenol-Coefficient Test

By Arthur R. Cade, Ph.D.*
Givaudan-Delawanna, Inc.

The Author makes several new suggestions as to how the FDA test can be made to apply to both disinfection and sanitation problems.

ALTHOUGH it is admitted that a test which would insure the recording of a positive 100 per cent killing of the test-organism would be the ideal, nevertheless it is a fact that the methods as now accepted as official and used during the past forty years or more for determining the germicidal potencies of disinfectants, do not accomplish this desired end.

To begin with it should be emphasized that there are involved here really two specific problems, each closely related but distinct in purpose and in approach. Some workers fail to make this distinction and are therefore endeavoring to make the same tests which are applicable to one phase of the problem (disinfection) apply to the other (sanitation). However, the phenol-coefficient method can be made to apply to both if it is run properly and interpreted correctly, bearing in mind that for the former (disinfection) a complete 100 per cent killing of the test-organism is and should be the standard requirement, and that the test data obtained should be such that it really does represent that condition. For the latter (sanitation) purposes, where less than 100 per cent killing may be allowable under certain test conditions, various use-dilution test procedures can be employed—the criterion being that they truthfully simulate the method of use. In this connection however, the same phenol-coefficient method can be used with equally reliable results if the method is modified as suggested below and the results as obtained therefrom interpreted properly.

In the broad sense of the term, the purpose of determining a phenol-coefficient is two-fold. First, it is to obtain scientific data as to the true germicidal potency of the chemical or product in question. This infers knowledge as to the concentration required to produce 100 per cent killing of all of the organisms used as per the established procedure. Second, it is to obtain information concerning the speed of reaction or killing rate which will enable one to decide what concentration of the material will produce the desired effect under actual use conditions (i.e. the percentage of kill allowed as being comparable to the latter, and varying with different uses). As a means for obtaining such data in order to satisfy both of the above mentioned goals, the standard procedure (1) of determining the growth or absence of the test-organisms (+ or —'s) in the subculture tubes at the 5, 10, and 15 minute time intervals (and at a selected temperature of 20° C. for the disinfectants to be used on inanimate bodies; and 37° C. for germicidal action on or in the human body) has been accepted more or less unchallenged until recently (2). However, with the discovery that certain substances, such as the quaternary ammonium compounds and the halogenated synthetic higher phenols, and others (3), have been found to produce inaccurate data by the F.D.A. method, attempts are now being made to correct these discrepancies so that truthful information as to just what these products will actually do in a germicidal way will be available to all who desire to use it.

Several approaches to solving this problem have been made. Some workers (4) have suggested dropping the phenol-coefficient method completely and replacing it by substituting some other procedure for determining the germ-killing properties (not necessarily requiring a 100 per cent kill). Others (5) recognize the value of retaining the 100 per cent kill requirement in the test and propose different means (carrier methods) for determining the concentration of the chemicals being tested which will produce 100 per cent kill of the organisms as used in their specially selected test procedure. The

* Before Nat. Assn. Insecticide & Disinfectant Mfgrs., June 9th, Chicago.

DRAUGHT OR PACKAGE:

Which is more profitable to the brewing industry?

The year was 1935.

Beer had just been successfully packaged in cans. The cans were trade-marked "Keglined."

And here was how the beer market split up at that time: *75% was sold and consumed in taverns; 25% was packaged for consumption in the home.*

Twelve years slipped by, while the country changed from a depression to defense preparation, to four years of successful war, and back to peacetime reconversion.

And here is how the beer market now splits up in the fall of 1947: *33% is draught and 67% is packaged for home consumption.*

To the brewer the interesting aspect of this change is that his package business is the more profitable end. It affords better brand identification. It is a trend that began with the introduction of that easy-to-take-home package, cans trade-marked "Keglined."

We wish we could claim that even half the home-beer business was in the package we invented. We can't. But we do maintain that our beer can encouraged the wholesome habit of drinking beer at home. Here's the reason we think so.

It's light to carry. You don't have to return it. It saves refrigerator space. It keeps beer at its best. It's easy to discard when empty.

So, it helped switch the brewer's sales from mostly draught to mostly "home" —the more profitable end of the beer business.

We think, therefore, you'll agree that people who do business with Canco profit. And we'd like the opportunity of bringing our packaging know-how to bear on your container problems. To increase your business. To increase your profit.

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writer(6) has taken a third and different approach, recommending that the phenol-coefficient method be retained as it has been used to date, but supplementing the F.D.A. method with certain changes in technique which tests have shown conclusively to possess all the advantages of the standard method, and in addition make it more accurate.

In the former case, the results obtained usually do not give one the necessary information needed for determining how a 100 per cent kill can be obtained. As to the second approach (carrier methods methods) one does obtain more useful data, but still the end-points reached by these tests are questionable as to their insuring the 100 per cent kill. Also, the nature and number of test organisms employed in several of these suggested methods seem to the writer to be questionable as to being appropriate for the purpose desired (namely the killing of all of the bacteria that might be present in a freshly growing liquid media). Other factors also enter the situation to make for changes in the viability and resistance of the test organism when it is chosen as being of such smaller numbers and air-dried on pieces of glass or other carriers before being allowed to contact the chemical. Still other variables in the technique include the question as to the possible film formation by the compound (e.g., quaternaries), thereby covering the bacteria in a way that does not permit the full contact between bacterium and germicide for the total contact time. The possibility of clumping effects must also be ruled out as non-existing, as well as other interfering factors which these new procedures present, before they can be definitely considered more accurate for the purpose than is the F.D.A. method.

Therefore, since we already have a method which is fairly well established in the trade as to what it means, and how it works, with its terminology accepted for many years with rather definite uniform meanings; rather than introduce something new and perhaps thereby creating confusion at least among some, why not keep as close to the established procedures as possible, and improve what we already have so as to increase its efficiency and accuracy?

Based upon the above facts and discussion, we now ask the following questions:

1. Do we need the 100 per cent killing as our test criterion?

2. If not, what should we do as our next step toward accomplishing our desired ends?

AS TO the first question, our answer is yes. Under certain conditions we need to know the concentration of the substance being tested which will actually kill 100 per cent of the test-organisms
This should be the basis, as it now is intended to be, of the standard phenol-coefficient test as applied to disinfectants and germicides in general.

There are other uses however, even in the disinfection field, where complete killing is not an absolute essential. Just how many living organisms can be left and be safe is, of course, something that cannot be definitely established easily and cannot be set at a definite figure for all applications. However, since the method as used is at best only an arbitrary one, even should it indicate (which it does not) a 100 per cent kill end-point; and since it has been used for some 40 years and has seemed to have served its purpose quite satisfactorily, and since this F.D.A. test may record only around a 99.90 per cent kill, why should not a test which would establish a maximum of 99.99 per cent kill end-point be satisfactory and better?

To be more explicit, as shown in our previous paper, a minimum or no-growth finding by the F.D.A. method does not insure a 100 per cent kill of the test oragnisms. In fact we have shown that the maximum efficiency of this method to be that of showing only up to around 99.90 per cent kill. By incorporating the Cade-Halvorson plate-count modification, this effectiveness or accuracy of the phenol-coefficient method becomes increased to showing a 99.99 per cent kill; while following this procedure with (or even replacing it by) the writer's swab technique then the accuracy of the method becomes increased still further up to including about a 99.9999 per cent kill, or better.

Thus, as is now official for the F.D.A. method, if we start by using say 500,000,000 organisms added to 5 c.c. of the test solution, and then at the end of the test period we remove the standard loopful, in it there will be, assuming uniform distribution of all test-organisms in the 5 c.c. of medication, 1 million bacteria, if no kiling has taken place. This number when transferred to a tube of broth, as in the F.D.A. test, would naturally be sufficient to produce growth in the subculture tube. Now assume a 99.00 kill, and there would be brought over to the subculture tube 10,000 organisms, which also would, in all probability, though not positively, produce growth. However, even if the percentage of kill was 99.90, then only 1000 would be transferred per loopful. In actual practice there might be less than one half that number due to the law-of-probability effects. Such a small inoculum might have less than a 50-50 chance to grow in the subculture broth and therefore could readily produce a minus tube. This would then be interpreted by the F.D.A. test to mean complete killing, which you see would be quite incorrect. Thus the limit of accuracy for the F.D.A. method is around the 99.90 per cent kill point.

With certain types of chemicals which react with the test organisms so as to render them more difficult to recover in the subtransfer broth, this maximum per cent kill limit would be nearer the former figure of 99 per cent. Using the recommended plate-count method described above this maximum percentage kill readable by the test becomes nearer 99.99 per cent. This is because the agar plates allow for more of the organisms carried over in the loopful to grow during the 48-hour incubation period, whereas in the broth tubes (F.D.A. method) thousands of bacteria often are present in the medication tube at the end of the test period and, although carried over into the subculture tubes, they die-off there during the incubation period which follows. In the agar plates under identical con-

ditions of test many or most of these grow and become countable as colonies at the end of the test (48-hour incubation). Our data show also that even under these conditions some (at times perhaps an appreciable percentage) of these organisms also fail to recover in the agar and die-off during incubation.

This is especially true for those types of germicides for which we have no suitable antidote available at the present time. Continuing along this same line of reasoning, it is evident that there could be 1000 organisms left alive in the medication tube at the end of the test period (a 99.999 per cent kill) which would cause to be brought over to the subculture tubes 10 organisms (if uniform distribution present). But here again due to the laws of chance, actual uneven distribution, and the killing off of organisms during incubation as explained above, in some cases none of these ten organisms would be able to grow and the tube would show minus, giving a false reading as to the true 100 per cent kill end-point.

This theoretical discussion presented thus far is based upon the assumption that there exists in the medication tube a uniform distribution of the bacterial cells, and also that all of the micro-organisms are in the solution evenly suspended. Actually this is not true, because biological populations do not distribute themselves so evenly, and the laws of chance do not permit of the uniform removal of one bacterium when at the borderline of concentration which would mathematically suggest one organism per loopful being present. In addition, all of the bacteria originally added to the medication tube did not go into the solution and remain there; but rather some, due to surface tension and other physical forces present in the solutions being tested, are drawn to the sides of the tube where they adhere and thus are not available for withdrawal by the loop. Agitation may remove them later on and thus put them back into the solution and thereby cause some of the "wild-plusses" to appear in the test data on dilutions lower than those which previously had shown minus. Furthermore, with certain chemicals, especially those of the quaternary ammonium type, a film may form over these organisms which flocculated to the sides of the tube and they thus become protected, to a certain degree, against the toxic action of the medication. Then later on when the loopful is withdrawn for a test to determine the presence of viable organisms in the medication tube, a "wild-plus" may appear because, even though the medication solution is of a strength sufficient to kill all of the test organisms suspended therein, when thse protected bacteria come off of the sides of the tube they may get into the loopful being withdrawn before they have contacted the medication long enough to be killed by it. This phenomenon, no doubt, accounts in part for the variations in test data and "wild-plusses" one obtains when running phenol-coefficients on quaternary compounds. Coagulation and agglutination effects may play a similar role here.

To recapitulate: the following four factors exist and play their respective roles in the standard phenol-coefficient method in determining the accuracy and uniformity of the test data obtained. Likewise, the extent of their control in the test technique determines, to a certain degree, the closeness or extent of distance apart which duplicate tests produce as their data. These four factors are:—

1. The uniformity of the loopful withdrawn.
2. The Random-Sampling Error.
3. The bacteriostatic effect of the medication as it increases the killing action going on during the incubation period.
4. The adherence of bacteria to the sides of the tube (including coagulation and agglutination effects of bacteria and medication).

Each of these factors must be accurately controlled when running phenol-coefficient tests. Some of these have not been so recognized in the past by workers in this field. The information presented here, together with that given in the writer's previous papers on this subject (7), show a method easily applied for accomplishing these essential and desired ends. It includes using the plate count procedure and a larger loop in order to reduce the random-sampling error and that error brought about by the dying off of the organisms during incubation. In addition, by applying the writer's swab technique, or some suitable modification or equivalent thereof, the latter (4) variable can be taken care of; while just ordinary precaution as is to be expected of a good technician running phenol-coefficient tests will take care of the first (1) variable.

STILL another approach to this disinfectant testing problem, and a factor which needs consideration, concerns the situation that exists where many good and serviceable compounds show a 99.99 per cent kill in a practical concentration (from the cost standpoint) but may require two or three times that quantity to produce the 100 per cent kill. Compounds of this type are now being used extensively in the disinfectant field and show great variations in their phenol-coefficient data (duplicate tests) because of this property. A coefficient range, rather than a definite figure, is therefore the best method for evaluating such products which show in some cases a coefficient of X $\pm$ 20 per cent in numerical value, as the figures obtained from that concentration which always gives a minus in the subculture tube by the F.D.A. Method, and that which always gives plus. Thus for such products one test is never sufficient. At least five duplicates should be run and ten would be preferred. If one does that and thereby determines that strength which gives all minuses and that which produces all plusses he may find data somewhat as follows:

Dilution of disinfectant	*Duplicate test data*
1-275	— — — — — —
1-300	+ — — — — —
1-325	+ + — — — —
1-350	+ + + — — —
1-375	+ + + + — —
1-400	+ + + + + —
1-425	+ + + + + +

Phenol-coefficient thus equals 44 to 66 or 55 $\pm$ 20%

This is not due to just an error in test technique, but is, in part at least, a normal biological feature due to variations in resistance of test organisms and other factors causing a sharp decline in the killing rate after the 99.99 per cent kill has been obtained. Therefore, using this table of data as an example, since a 1-350 dilution of

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the disinfectant would show a minus in 50 per cent of the tests run, should it be necessary from a practical standpoint to demand using 25 per cent or more of the material in order to get a result indicating complete killing in all of the tests? This question has special significance when one considers that the test itself at best is not capable of determining when a 100 per cent killing has been obtained, and may register an apparent 100 per cent kill when at around the 99.90 per cent killing point. Using plate counts in place of the plus and minus in broth tubes as the test criterion we get more quantitative data, but even here we have the same trend, i.e. a wide range exists between where we obtain six plates all of which show 0 and six all of which show some colonies. Plates from dilutions in-between will show 0 counts on some of the six duplicates and a few (maybe up to 200 colonies) in the others. A count of 100 (all other test factors being correct) represents a 99.99 per cent kill under these test conditions.

However we should bear in mind that this count of 100 organisms per loopful means that in the test solution (assumed to be free of bacteria as based upon a negative test or minus tube by the F.D.A. Method) there are actually present 100x100 or 10,000 organisms per cc. A count of 1 by this method (= a 99.9999 per cent kill) means there may be over 100 living organisms per cc. still present in the medication tube at the end of the test period (assumed by the F.D.A. minus data to be all dead). Likewise, even a minus tube and a zero plate-count could be possible as test data findings, with some 250 to 500 viable bacteria per c.c. still present in the solution thus assumed to have been disinfected (100 per cent killed), on the basis of these findings. We emphasize this here so that one will not be misled in thinking that a count of 10, or even 100, as referred to above as recording a 99.999 per cent and a 99.99 per cent kill respectively, is really insignificant. It does not mean that we have only 10 organisms to contend with, but rather, 100 or more times that amount per cc. of the supposedly disinfected solution.

Also, we wish to emphasize that possibly the setting of this end-point at a 99.99 per cent kill could best be accomplished by making the requirement, for example "100 or less organisms per loopful transferred remaining," rather than using the 99.99 per cent terminology, which this figure represents.

Summary

IN THIS paper we have presented three major problems to be considered as to the best answer for their solution:—

FIRST: Granted that a 100 per cent kill end-point is desired in many cases, how can we best determine if we have it?

SECOND: Granted that in some cases less than a 100 per cent kill as the test end-point should be satisfactory, is a 99.90 per cent kill of the test organism (a pathogen) sufficient, or should we not demand a 99.99 per cent kill as the minimum?

THIRD: Since we cannot determine accurately the 100 per cent kill end-point concentration by methods thus far suggested or used, and since we have accepted and used and found satisfactory for many years a method which may give only a 99.90 per cent end-point; we ask, why should we not consider a test that gives a 99.99 per cent end-point as practical for the purpose at hand? Such a method, referred to above, comprises using the F.D.A. phenol-coefficient test, supplemented with the Cade-Halvorson plat-count technique (8). In using the latter we offer as a suggestion running at least three duplicate tests, one of which must show 0 counts with the other two having counts less than 100; or better still using five duplicates with at least two showing 0 and the others with counts less than 100. Broth tube data should be obtained in parallel with two showing minus and 1 plus, or three minus and two plus respectively.

Recommendations—"M.K.D.'s"

On the basis of the above we conclude and suggest as follows:

1. That standards be set up for determining the 100 per cent kill end-point, using for the purpose the writer's swab technique or some other similar type of test such as adding the agar direct to the emptied medication tube, rotating the same, and plating direct in the tube itself.

2. That we set up a 99.99 per cent kill end-point, using the plate-count method as described above or any other procedure which will accomplish the same end.

3. That we determine the 99.90 per cent kill end-point concentration by means of the standard F.D.A. broth tube test.

Thus we will be able to set up three criterions of test data figures, naming these as "M. K. D.'s" (minimum killing dilutions) 100, 99.99, and 99.90 respectively, thus evaluating our disinfectants or germicides in a manner similar to the way toxic materials are evaluated by M.L.D.'s 100, 50, etc. By so doing we would obtain all of the scientific data needed in order to know the true worth of a product, and from these data could be determined safe and practical use-dilutions for each specific purpose, with the proper regulatory requirement selected according to applications as according to the 100, 99.99, or 99.90 figures. Any other set of percentage kill end-points could be substituted for those chosen and presented here, if desired or thought to be better for the purpose.

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Washroom Sanitation Specialties

By Milton A. Lesser

OVER the past twenty years has come a wide expansion in the market for those products used principally in the sanitary maintenance of washrooms and restrooms of office buildings, factories, institutions, theaters and other public places. The group includes toilet bowl cleaners, drain pipe cleaners or solvents, deodorant blocks and liquids, and various products which exert both deodorant and disinfectant actions.

A standard item with professional maintenance men, toilet bowl cleaners also have a strong position in household sanitation. The growing popularity of such products is well indicated in consumer purchasing studies, such as the Milwaukee surveys. The 1946 survey (1) showed that toilet bowl cleaners continued to gain in use by Milwaukee families; reaching a new high of 68.6 per cent. This growth in popular demand was also reflected by an increase in the number of brands available there.

As was recently pointed out by one authority, (2) a good toilet bowl cleaner, in addition to fairly ready solubility in cold water, should be relatively safe and easy to handle. Excessive causticity, toxicity and hygroscopicity should be avoided. The product should be stable in the usual large-opening, sprinkler top metal containers, without showing tendencies toward reactivity or caking.

Sodium bisulfate, also known as sodium acid sulfate or niter cake, is undoubtedly the most important ingredient and is often the sole component of modern toilet bowl cleaners. Long used in such products and considered one of the most effective materials for the purpose, sodium bisulfate depends for its action on the formation of sulfuric acid on contact with water. The federal specification(3) for toilet bowl cleaner is based on sodium bisulfate. According to the requirements of this set of standards, the material must be crystalline or granular in form and must not cake in the container. All of the material should pass through a No. 3 sieve, and not more than 10 per cent, by weight, should pass through a No. 30 sieve. On analysis by titration of a suitable solution, the material must have a sulfuric acid equivalent of not less than 30 per cent, by weight.

Since cleaners containing sodium bisulfate as the active ingredient depend on the release of a strong acid, there are certain precautions and restrictions inherent in their use. The federal specification requires that the following warning shall appear on the cover of the container: Do not use on bathtubs, washstands, sinks, or other metal or enameled fixtures. Warning is also given against inhaling dust or allowing sodium bisulfate cleaners to touch the skin. In case of

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accidental contact, the skin should be washed promptly with liberal quantities of water.

The directions for use are fairly simple: First flush the toilet; then shake the cleaner into the water and around the sides of the bowl above the water line. Let stand a few minutes; remove the discoloration with a toilet bowl brush or swab, then flush the toilet. When the bowl is badly discolored, repeat the operation, allowing the solution to remain in the bowl 15 minutes or longer.

Potassium acid sulfate, also a very satisfactory agent for cleaning toilet bowls, may be used instead of the sodium salt. It is more expensive, however. Adjunct materials or inert fillers may be mixed with sodium bisulfate in formulating cleaners. John, (4) for example, suggests that crude niter cake be mixed with sodium sulfate in a ratio of 8:2. Another formula listed by this worker is as follows:

	Parts
Niter cake (crude)	80
Sodium sulfate	10
China clay	10

Of interest in connection with the combined use of sodium bisulfate and sodium sulfate is a patented deodorizing and cleansing powder for use on porcelain toilet bowls.(5) This consists of:

	Parts
Sodium bisulfate	80
Phenol or essential oil	4
Sodium sulfate	16

It is claimed that the sodium sulfate prevents the sodium bisulfate from liquifying or caking when combined with the phenol or oils used as perfuming agents.

Quite simple, but said (6) to form an effective toilet bowl cleaner, is a combination of the following ingredients in powder form:

	Parts
Sodium bisulfate	90
Ferric sulfate	10

Recently, Vallance (2) has discussed various materials that may be used advantageously in preparing toilet bowl cleaners. Aluminum salts, for example, may be added to such cleaners because of their precipitating and deodorizing action. Other possible ingredients include soda ash, trisodium phosphate, sodium sesquisilicate, sodium perborate, sodium pyrophosphate, potassium carbonate and binoxalate and various ammonium salts. He lists the following formula as a basis for further experiment and variation:

	Parts
Sodium acid sulfate	45
Sodium chloride	20
Aluminum sulfate	15
Sodium perborate	10
Sodium pyrophosphate	10

Somewhat old-fashioned, but cited in both American (7) and British (8) reference texts is a toilet bowl cleaner made from:

	Parts
Sodium carbonate	16
Caustic soda	3

NOT limited to washrooms, but applicable wherever grease-clogged drains are found, drainpipe cleaners or solvents form an important part of the sanitation equipment of housewives and maintenance men alike. The basic ingredient of all of these preparations is sodium hydroxide (caustic soda or lye). This is either used as such or is mixed with aluminum, or zinc-coated aluminum, turnings or chips. Sometimes mixtures of sodium hydroxide with aluminum turnings and sodium nitrate are employed. Various other combinations are employed occasionally.

Of course, the function of the caustic soda is to saponify the grease and act on the insoluble soaps that may have formed in the presence of hard water. It is probable that the use of potassium hydroxide, which is somewhat more expensive, might yield better results. This compound converts the grease into soft soaps which are more soluble in water than the corresponding soda soaps. The heat generated on dissolving caustic soda or caustic potash in water also aids in saponifying the grease. When water is added to mixtures containing aluminum and sodium hydroxide, they react vigorously with the liberation of hydrogen gas. With preparations also containing nitrate, the hydrogen forms ammonia gas, which then acts chemically on the grease. In either case, the agitating or stirring effect produced by the gas formation facilitates the disintegration and removal of the clogging waste matter.(9, 10)

A check of the patent and technical literature indicates that a number of variations in formulation are possible. Thus an older European patent (11) calls for the use of approximately equal parts of sodium hydroxide and an alkali carbonate, plus 3 to 5 per cent of powdered aluminum or zinc. In an American patent (12) describing the production of "drain opening" materials, both metals are combined in an interesting manner. Molten zinc is sprayed on granular ingot aluminum to coat each particle and this is followed by rolling to increase the surface area of the metallic product. The resulting material is suitable for mixing with sodium hydroxide.

Another approach to more effective drain pipe cleaning is suggested in patented products (13) consisting of:

Caustic soda	1 lb.
Aluminum shavings	½ oz.
Aromatic organic materials	½ to 1 oz.

The novel feature of such products is that the specified "aromatic organic materials" are various powdered spices, like ginger, cinnamon or cloves. These may be used separately or in combination. It is claimed that these inclusions greatly increase the gas formation when the compound is used with water. The stronger bubbling and agitation effects which follow serve to augment the effectiveness of the solvent in its action in cleaning out drain pipes, traps and the like. In addition, the presence of these spicy materials acts to combat the unpleasant, irritating odors commonly associated with the use of ordinary drain pipe cleaners.

Another development of much more recent origin employs a mixture of aluminum powder, sodium chlorite, and caustic soda to clear grease-clogged drains. Said (14) to be patented, the compound consists of:

	Per Cent
Aluminum	3
Sodium chlorite	10
Caustic soda	87

For reasons already indicated, caustic potash is favored in some quarters. One simple preparation, based on this alkali, is made from: (15)

	Parts
Potassium hydroxide, dry flakes	99
Aluminum, fine powder	1

If desired, the two alkalies may be combined, as in the following drain pipe cleaner listed in Bennett's text; (7) all the ingredients being mixed as powders:

	Parts
Caustic soda	15
Chalk	25
Caustic potash	60

All of these products should, of course, be kept dry and packed in air-tight containers. The presence of moisture in a sealed container may cause the release of sufficient gas to "blow up" the can. The cans should carry adequate directions and warnings as to the danger of the contents. The Federal Caustic Poison Act requires that products containing caustic soda or caustic potash be labeled POISON, with directions for the treatment of external or internal injury.

In passing it may be mentioned that trisodium phosphate is sometimes effective for removing slimy masses in drains not amenable to caustic soda or caustic potash. (16)

DESPITE occasional merchandising efforts to interest the housewife, deodorizing blocks or cakes have remained almost exclusively in the realm of the public washroom. Used in wall containers, urinals or suspended inconspicuously in toilet bowls, they vaporize slowly to provide prolonged deodorizing action. (17) This is particularly true of blocks consisting of perfumed paradichlorobenzene. A properly made block of this material should slowly and evenly evaporate away without leaving any residue.

Wall containers for these deodorizing blocks usually consist of perforated metal and require little attention other than periodic refilling. While there is a need for standardization, the most popular containers are of 1, 1½ and 2½ pound capacity. According to Schwarcz, (18) the paradichlorobenzene blocks for these containers should last about one month, two months and three months, respectively. The active air deodorizing life of these blocks will depend to some extent upon such factors as the density of the cake, room temperature, ventilation, size and number of container perforations, and perhaps other elements.

Para blocks for urinals appear to be fairly well standardized at four ounces. Toilet bowl blocks, though differing in shape and carrying a wire hanger are generally of the same weight as the standard size urinal block. All of these products are usually wrapped in cellophane or some similar air-tight packaging material to prevent weight loss by evaporation prior to use.

Perfuming of paradichlorobenzene blocks is a very important consideration. Not only should the perfuming material be compatible with para, but it should also have the same vaporizing rate so that it will last as long as the block. Impregnation of the crystals is facilitated if the perfume oil or compound is mixed with alcohol. A number of essential oil and perfume manufacturers supply odorizing compounds especially formulated for deodorizing block manufacture. Depending upon the type of compound used, the amount of perfuming material generally ranges from about 6 to 8 ounces per 100 pounds of paradichlorobenzene. An excess should be avoided, for not only is it wasteful but it also gives the block an oily appearance. Too little perfume means that the block will not fully fulfill its odor-covering job.

The question of color also rates careful thought. After unpleasant experiences with vividly colored blocks which stained containers and walls, it is now customary to make the larger blocks for wall deodorizers without any color. Smaller blocks for urinals may be tinted in line with the type of odor used. Suitably colored perfuming materials are available for this purpose from perfume houses.

In the early days, these deodorizing blocks were prepared by melting the paradichlorobenzene and pouring it into suitable molds; perfume and color being added to the melt. Aside from being slow and laborious, this method had a number of disadvantages. The blocks were brittle and not always uniform. Loss by evaporation of paradichlorobenzene and perfume often reached substantial proportions.

This method is seldom used today. It has been replaced by mechanical presses and dies which shape the raw materials into blocks of appropriate size. Foot presses are used by small manufacturers for making the four-ounce urinal type of block. Such blocks are even-grained and opaque, especially if smaller crystals are used, and loss through evaporation is negligible. The foot press, however, is slow and does not lend itself to the production of the larger cakes for wall containers. High speed production and better quality blocks are obtained by the use of powerful mechanical presses by which the perfuming agents are fused into the paradichlorobenzene under tremendous pressure. The result is a highly compressed, even-textured block or cake that evaporates slowly.

NAPHTHALENE was formerly used extensively for making air deodorizing and urinal blocks. It evaporates more slowly than paradichlorobenzene; perhaps too slowly to be highly effective as an air deodorizer for washroom requirements. Its odor is somewhat difficult to mask, hence more powerful perfuming materials are generally required. Sometimes, in order to obtain the prompter action of the more volatile agent, a proportion of paradichlorobenzene is blended with the naphthalene. Thus, an older type air deodorizer was made by combining the following ingredients, to which 0.5 per cent of citral could be added if desired:

	Per Cent
Naphthalene, scales	70
Camphor, sublimed	10
Paradichlorobenzene	20

From the same source (7) comes a more up-to-date air deodorant consisting of:

	Per Cent
Naphthalene	73
Camphor, synthetic	7
Hexachloroethylene	2
Paradichlorobenzene	10
Bornyl acetate	5
Eucalyptal	3

In discussing combinations of naphthalene with paradichlorobenzene, Schwarcz (18) notes that the surface

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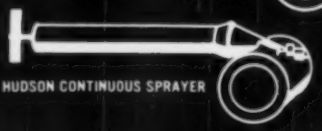
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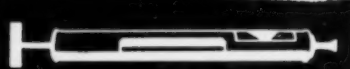
HUDSON DUSTER

of the block will become pitted after a few days as the more volatile para evaporates away.

Urinal blocks made with paraformaldehyde are also used in public washroom sanitation. The paraformaldehyde releases formaldehyde which, as shown in a previous discussion,(17) forms the basis of many air deodorizing compositions. One such product is described by Mason (19) as follows:

	Parts
Paraformaldehyde	40
Alcohol	19
Sodium phosphate	40
Eucalyptus oil	1

The ingredients are mixed to form a suspension. The alcohol is allowed to evaporate and the remaining material, which is of a pasty consistency, is pressed into blocks and allowed to harden.

Another type of urinal block yields a combination of chlorine and formaldehyde vapors. Easily recognized by their penetrating and not-too-pleasant odor, such blocks may be made with gypsum or plaster of Paris as the vehicle or binding agent. As the cake disintegrates, more or less slowly, this inert binder is washed into the drain by the flowing stream of water. A product of this sort, also cited by Mason, may be made along the following lines:

	Parts
Gypsum paste	90
Paraformaldehyde	4
Bleaching powder	4
Eucalyptus oil	1
Sodium chloride	1

The gypsum, mixed with sufficient water to form a moldable paste, is combined with the other ingredients and pressed into blocks or cakes.

IT has been said (18) that the introduction of the paradichlorobenzene deodorizing block has led to a decline in the popularity of the toilet and urinal drip machine. However that may be, there are many of these machines in use. Moreover, improvements in this type of equipment are also being made. This is quite evident in a recent patent (20) describing improved toilet disinfectors utilizing the wick principle. Liquids for these machines vary in composition, but an illustrative preparation is given (7) as containing:

Nitrobenzene	6 pt.
Eucalyptus oil	6 pt.
Yellow neutral mineral oil	50 gal.

Formulas for other kinds of deodorizing fluids, not necessarily requiring mechanical dispensers and hence suitable for home use, are occasionally given in the technical literature. For example, a preparation which is useful in wash water for urinals, bedpans and the like is given by Belanger (21) as follows:

Thymol	80 gr.
Pine oil, distilled	½ oz.
Oil of spike lavender	½ oz.
Potassium permanganate	8 gr.
Isopropyl alcohol	12 fl. oz.
Water, to make	16 fl. oz.

MENTION should also be made of household liquid bleaches which are widely used to clean and deodorize toilet bowls. Ordinarily a few ounces of a suitable hypochlorite solution is poured into the bowl and allowed to act for several hours or preferably overnight. Such a solution may also be added to the water used for washing toilet bowls and the like. The undiluted solution may be employed to deodorize drains, drain pipes and traps.

Standards (22) for these solutions set the amount of available chlorine at not less than 10 per cent by weight. There are various ways to make these chlorine-liberating, bleaching liquids,(2, 18, 23) but in the main they consist of dilute solutions of sodium or potassium hypochlorite. One simple procedure (21) is as follows:

Calcium hypochlorite	15 lb.
Soda ash, light	10 lb.
Water	30 gal.

Mix the calcium hypochlorite and the soda ash separately, each with 15 gallons of water. Pour the two solutions together and allow the precipitate to settle. Finally siphon off or decant the clear supernatent fluid. Such solutions are usually packaged in brown, rubber-stoppered bottles.

Chlorine-liberating materials in dry form, like calcium hypochlorite (bleaching powder) may also be useful for preparing powdered, sprinkle-type toilet bowl cleaners. The following formula has been suggested (24) as a basis for experiment.

	Per Cent
Caustic soda	10-20
Calcium hypochlorite	10-15
Sodium perborate	3-5
Pumice or slate powder, to make	100

PINE oil is widely used in the preparation of washroom sanitation products. Floor scrub soaps, for example, are often made with it as an important ingredient. (25) Properly prepared and used in correct dilutions, pine oil emulsions are highly effective as disinfectants and deodorants for both the home bathroom and the public washroom. With such product, however, claims for antibacterial action must be substantiated by laboratory tests, with the phenol-coefficient stated on the label.

Without going too deeply into the subject (which is quite an extensive one), it is possible to cite pine oil preparations which fit more or less specifically in the subject under discussion. For example, pine oil disinfectant made according to the Hygienic Laboratory formula has been recommended (16) as a lavatory disinfectant. Along the same lines is a more modern pine oil preparation described (15) as a disinfectant for toilets. This is made from:

	Parts
Phenol	1
Pine oil	5
Sulfonated olive oil	16
Water	78

Various other preparations have been advocated for similar purposes. Cresol disinfectants have long been used for washroom disinfection, and products of the Lysol type have a rather well established place in cleaning the home bathroom and rendering it sanitary. Very noteworthy, and perhaps indicative of a new trend is a recommendation appearing in a recently-published sanitation manual. (26) In this text the liquid disinfectant prescribed for use on toilet seats and other areas is a solution of an odorless quaternary ammonium compound. This is in the class of newer surface-active agents that are finding wide use because of their antibacterial qualities.

Bibliography

(1) Anon.: Soap & Sanit. Chem. 22: 42, July 1946
(2) Vallance, J. M.: Soap & Sanit. Chem. 23: 42, March 1947

(*Turn to Page* 161)

MERCK IS SERVING THE INSECTICIDE INDUSTRY AS A BASIC SOURCE OF SUPPLY FOR DDT

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Determination of CHLORINE in DDT INSECTICIDES

Eight methods are proposed by the Chemical Analysis Committee, Insecticide Section N.A.I.D.M., as official for determining total chlorine in DDT insecticide formulas*

By Dr. G. W. Fiero
Stanco, Inc., New York
Chairman
Chemical Analysis Committee
Insecticide Section, NAIDM

Method I

Total Chlorine in Technical DDT

(1) Weigh a quantity of sample containing about 1.00 g. of DDT, transfer to a 250-ml. volumetric flask, and make to volume with chlorine- and thiophene-free beznene. Shake until the DDT is dissolved and the solution well mixed. Transfer a 25-ml. aliquot to a 250-500 ml. standard-taper Erlenmeyer flask.**

(2) Evaporate on a steam bath until most of the benzene is removed. It is not desirable to evaporate to dryness, as DDT may decompose with loss of hydrochloric acid.

(3) Add 25 ml. of 99 percent isopropanol and 2.5 g. of metallic sodium in the form of ribbons or small pieces, and shake the flask to mix the sample with the alcohol. Connect the flask to a reflux condenser and boil gently for at least one-half hour. Shake the flask occasionally. Eliminate excess metallic sodium by cautiously adding 10 ml. of 50 percent aqueous isopropanol solution through the condenser at the rate of 1-2 drops per second. Boil for an additional 10 minutes, and then add 60 ml. of water.

(4) The chlorine may then be determined by one of the following methods:

(a) Cool the flask, and transfer the contents to a 250-ml. beaker. Add 2-3 drops of phenolphthalein solution, neutralize by adding nitric acid (1-1), and then add 10 ml. in excess. Add 25 ml. of 0.1N silver nitrate and coagulate the precipitated silver chloride by digesting on a steam bath for one-half hour with frequent stirring. Cool, filter through a fast qualitative paper, and wash thoroughly with distilled water. Add 5 ml. of saturated ferric alum solution, and determine the excess silver nitrate in the filtrate by titration with 0.1N potassium (or ammonium) thiocyanate. (Edit Note: Each ml. of thiocyanate used being equivalent to a ml. of the excess 0.1N silver nitrate.) Subtract the quantity of silver nitrate found in the filtrate from that originally added. The difference will be that required to combine with the chlorine in the DDT. One ml. of 0.1N silver nitrate is equivalent to 0.0035457 g. of chlorine. To obtain the percentage of DDT multiply the chlorine value by 2.

(b) Cool the flask, add 2-3 drops of phenolphthalein solution, neutralize by adding nitric acid (1-1) and then add 10 ml. in excess. Cool, add 25 ml. of 0.1N silver nitrate. Then add 5 ml. of nitrobenzene and 5 ml. of saturated ferric alum solution. Swirl flask to coagulate the precipitate. Backtitrate the excess silver nitrate with 0.1N potassium (or ammonium) thiocyanate. After the first color change has occurred, continue the titration cautiously with vigorous shaking to the appearance of a reddish brown tinge which is permanent (five minute end point). Calculate percentage of DDT as in (a) from the amount of silver nitrate required for the titration.

(c) Cool the flask, add 2-3 drops of phenolphthalein and neutralize with nitric acid (1:1), then add 6 ml. excess. Cool the flask to room temperature and then transfer the contents to a 400 ml. beaker. The volume of solution should be 200-250 ml. Titrate the chloride with 0.1N silver nitrate using Ag-AgCl electrodes on an electrometric titrimeter (Fisher titrimeter or the equivalent). Calculate the percentage DDT as in (a).

(d) Cool the flask, and transfer contents to a platinum dish. Evaporate

* These methods are applicable only when DDT is the sole chlorine containing compound present in the product.

** Direct weighing of the sample may be substituted for the aliquoting provided the weighing does not introduce an error of more than 0.1% in the sample weighed.

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to dryness and ignite as thoroughly as possible at a temperature not exceeding dull redness (not over 650° C.). Extract with hot water, filter, and wash. Return residue to platinum dish and ignite to ash. Dissolve in nitric acid (1 plus 4), filter from any insoluble residue, wash thoroughly, and add this solution to the water extract. Add 10 per cent silver nitrate solution avoiding more than slight excess. Heat to boiling, protect from light, and allow to stand until precipitate is coagulated. Filter on weighed Gooch crucible, previously heated to 140-150° C. and wash with hot water, testing filtrate to prove excess of silver nitrate. Dry the silver chloride at 140-150° C. cool and weigh. Calculate the percentage of chlorine and from this calculate percentage of DDT as in (a).

Method II

Total Chlorine in Dusting Mixtures Containing DDT in Absence of Organic Matter

(5) Weigh a quantity of sample containing about 1.00 g. of DDT, transfer to a 125-200 ml. glass stoppered flask. Add *exactly* 100 ml. of chlorine and thiophene-free benzene. Shake until DDT is dissolved and the solution is well mixed. Allow to settle and transfer a 10 ml. aliquot to a 250-500 ml. standard-taper Erlenmeyer flask and proceed as in Method I, paragraph (2). *Note*: If free sulfur is present, use the hydrogen peroxide procedure outlined in Method VI.

Method III

Total Chlorine in Dusting Mixtures Containing DDT in Presence of Organic Matter Such as Coloring Matter, Plant Resins, etc.

(6) Weigh a quantity of sample containing about 1.00 g. of DDT and transfer to a 125-200 ml. glass stoppered flask. Add a small amount of chlorine-free decolorizing carbon (0.5-1.0 g.) and exactly 100 ml. of chlorine and thiophene-free benzene. Shake until the DDT is dissolved and the solution well mixed. Filter into a narrow-necked flask through a fast qualitative paper without suction, and keeping the funnel covered with a watch glass to avoid loss from evaporation. Transfer a 10 ml. aliquot to a 250-500 ml. standard-taper Erlenmeyer flask. Proceed as in Method I, paragraph (2) and (3).

(7) Cool, add 2 or 3 drops of phenolphthalein solution, neutralize by adding nitric acid (1-1) dropwise, and then add 10 ml. in excess. Cool, if necessary, to room temperature, transfer contents of flask and aqueous washings to a small separatory funnel, and shake with 15 ml. of a mixture of equal volumes of isoamyl alcohol and ethyl ether. Draw off the aqueous layer into a second separatory funnel and extract again with 15 ml. of the isoamyl alcohol-ethyl ether mixture. Draw off the aqueous layer into a 250 ml. beaker. Wash the two extracts twice with 10 ml. portions of water. Combine the aqueous wash solutions with the aqueous solution in the beaker. The chlorine may then be determined by one of the following methods:

(a) Add 25 ml. of 0.1N silver nitrate and coagulate the precipitated silver chloride by digesting on a steam bath for one-half hour with frequent stirring. Cool, filter through a fast qualitative paper, and wash thoroughly with distilled water. Add 5 ml. of saturated ferric alum solution, and determine the excess silver nitrate in the filtrate by titration with 0.1N potassium thiocyanate. Subtract the quantity of silver nitrate found in the filtrate from that originally added. The difference will be that required to combine with the chlorine in the DDT. One ml. of 0.1N silver nitrate is equivalent to 0.0035457 g. of chlorine. To obtain the percentage of DDT, multiply the chlorine value by 2.

(b) Add 25 ml. of 0.1N silver nitrate. Add 5 ml. of nitrobenzene and 5 ml. of saturated ferric alum solution. Swirl the flask to coagulate the precipitate. Back titrate excess silver nitrate with 0.1N potassium thiocyanate. After the first color change has occurred, continue the titration cautiously with vigorous shaking to the appearance of a reddish brown tinge which is permanent (five minute end point). Calculate percentage of DDT as in (a) from the amount of silver nitrate required for the titration.

(c) Cool the flask to room temperature and then transfer the contents to a 400 ml. beaker. The volume of solution should be 200-250 ml. Titrate the Cl with 0.1N silver nitrate using Ag-AgCl electrodes on an electrometric titrimeter (Fisher titrimeter or the equivalent). Calculate the percentage DDT as in (a).

(d) Make alkaline to phenolphthalein by addition of N sodium hydroxide. Cool the flask, and transfer contents to a platinum dish. Evaporate to dryness and ignite as thoroughly as possible at a temperature not exceeding dull redness (not over 650° C.). Extract with hot water, filter and wash. Return residue to platinum dish and ignite to ash; dissolve in nitric acid (1 plus 4), filter from any insoluble residue, wash thoroughly, and add this solution to the water extract. Add 10 per cent silver nitrate solution avoiding more than slight excess. Heat to boiling, protect from light, and allow to stand until precipitate is coagulated. Filter on weighed Gooch crucible, previously heated to 140-150° C. and wash with hot water, testing filtrate to prove excess of silver nitrate. Dry the silver chloride at 140-150° C., cool and weigh. Calculate the percentage of chlorine and from this calculate percentage of DDT as in (a).

Method IV

Total Chlorine in Mineral Oil Sprays Containing DDT and in the Absence of Organic Matter (Plant Extractive Material, Organic Thiocyanates)

(8) Transfer a quantity of sample containing about 0.1 g. of DDT to a 250-500 ml. standard-taper Erlenmeyer flask. From this point proceed as directed under Method I, paragraph (3). *Note*: If DDT content is less than 2 percent, use the isoamyl alcohol-ethyl ether extraction in Method III to remove excess of oil.

Method V

Total Chlorine in Mineral Oil Sprays Containing DDT and Organic Matter Such as Plant Extractive Material from Pyrethrum or Derris and/or Cube

(9) Use Method IV with the isoamyl alcohol-ethyl ether extraction of Method III.

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Method VI

Total Chlorine in Mineral Oil Sprays Containing DDT in the Presence of Organic Thiocyanates with or without Plant Extractive Material

(10) Transfer a quantity of sample containing about 0.1 g. of DDT to a 250-500 ml. standard-taper Erlenmeyer flask. Proceed as in Method I, paragraph (3).

(11) Ad 5 ml. of 30 percent hydrogen peroxide, a few drops at a time, through the top of the condenser. Heat the mixture in the flask to boiling and boil for 15 minutes. Add 5 ml. more of 30-percent hydrogen peroxide and boil again for 15 minutes. Proceed as in Method III, paragraph (7).

Method VII

Total Chlorine in Emulsions Containing DDT, Water, Solvent and Emulsifying Agent

(12) Transfer a sufficient amount (5 g. or more) of the well mixed sample to a tared weighing bottle. Weigh and wash with acetone into a 200 ml. graduated flask. Dilute to volume with acetone and pipette an aliquot containing approximately 0.1 g. DDT to a 250 ml. standard-taper Erlenmeyer flask. Place on a steam bath and with the aid of an air current expel all the water and acetone. Proceed as in Method I, paragraph (3). Note: Determine a blank on reagents used in each of these procedures limiting the 0.1N silver nitrate to 5 ml. A larger excess leads to high and erratic blank values.

Use the hydrogen peroxide and isoamyl alcohol-ether extraction procedure on dispersible powders or sprays that contain surface-active agents or other ingredients that react with silver nitrate.

If procedure (c) is followed, a sample equivalent to 0.065-0.075 g. of DDT may be used.

BEER CAN AEROSOLS

(*From Page* 123)

"Freon-11" giving more high pressure liquefied gas. The degree of dispersion depends on available energy and in turn on the amount of low boiling liquefied gas such as "Freon-12." Regardless of the type of nozzle, a percentage increase in pressure of 60% such as occurs when changing from 25 to 40 psi causes an increase in the degree of dispersion.

5. Better practical distribution of insecticide.

The higher pressure ejects the aerosol more forcibly and aids greatly in the distribution. It aids in reaching high ceilings, drives the aerosol into protected places and in general presents a better appearance to the buying public.

6. Easier to control the pressure during manufacture.

It is admitted that 25 psi at 70° F. is very close to the lower limit that can be used. Keeping the pressure exactly at 25 psi will entail greater expense and will not be accomplished by most manufacturers. Some cans will run high and some will run low. The low ones will be ineffective and the high ones will break the existing law. If 40 psi at 70° F. is allowed, much more latitude will be permissible. An average of 35 with a maximum of 40 could be easily maintained. Furthermore it will not be necessary to remove all the air in the container.

7. Reserve gas pressure if diffusion occurs.

Seamed containers with gaskets will allow a slow diffusion of gas. With the higher pressure sufficient loss should not occur to interfere with the effectiveness for very long periods. The loss of 1.5 g. reduces the pressure by approximately 1 lb.

8. Less likely to stain.

Higher pressures which give better dispersions will not stain as easily as those having a coarse wet spray. The staining of wall paper and light fabrics is a serious problem with poorly dispersed concentrated solutions such as occur in the very low pressure aerosols.

9. Less tendency for clogged nozzles.

Higher pressures help prevent stoppage of nozzles by providing more force to eject foreign particles.

10. Higher pressures permit the use of more nonvolatile materials.

Very low pressure formulas cannot contain more than a few percent of nonvolatile materials if any degree of dispersion is expected. An increase in energy permits the use of more flexible formulations with more nonvolatiles. This provides an opportunity for insecticide manufacturers to prepare and sell concentrates.

11. Diversification of materials.

Some products such as deodorants, and germicides for air sterilization should be dispersed as finely as possible. In the future not only the insecticide but many other materials will be dispersed by this method. The manufacturer should not be handicapped by a regulation that will not permit diversification.

12. Safe in proposed containers.

No attempt will be made to discuss in this paper the safety of the proposed containers. This has been presented by the manufacturers concerned and is considered to be more than adequate for pressures as high as 40 psi at 70° F.

Summary

The following arguments have been presented in favor of accepting the proposed paragraph 302g exempting suitable metal containers from many of the regulations usually required by the Interstate Commerce Commission, and allow an increase in pressure to 40 psi at 70° F.

1. The dispersions are much more effective
2. The dispensing device can be very simple
3. Operation is better at low temperatures
4. More available energy possible
5. A better practical distribution of insecticide
6. Better limits for pressure control during manufacture
7. Reserve liquefied gas if some loss from diffusion occurs
8. Reduced tendency to stain light walls and fabrics
9. Less tendency for clogged nozzles
10. More nonvolatile matter permissible allowing cheaper formulations and giving manufacturers an opportunity to make concentrates.
11. Will allow this type of container for other products.
12. Safe at 40 psi at 70° F. in proposed containers or at higher temperatures.

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• Among the TRITON family of surface-active agents, the *non-ionic* types such as TRITON X-100 are of particular interest for cleaning and sanitizing applications. TRITON X-100 is fully compatible with the cation-active HYAMINES, as well as with soap and other anion-active materials. It is especially effective for cleaning hard surfaces, unaffected by hard water. When diluted for use, it is tasteless, odorless, non-corrosive . . . gives good drainage, leaves no scum or curd.

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Stable Insecticidal Spray

After study of several combinations, the following was recommended as an insecticidal spray for military use: DDT 25 per cent, "Triton X-100" 10 per cent, and xylene 65 per cent. This concentrate gives satisfactory emulsions in distilled, hard and sea waters, and can be diluted to 0.1-10 per cent of DDT and still give reasonably stable mixtures. It is used for controlling adult and larval mosquitoes, flies, and other insects, as well as for louseproofing clothing. H. A. Jones and H. J. Fluno, *J. Econ Entomol. 39*, 735-40.

Insect Repellent

5-Amino-1, 3-bis(2-methyl heptyl)-5-methyl hexahydropyrimidine shows a repellent property against houseflies. A solution of 50 per cent of the compound in alcohol, applied outdoors, repelled houseflies up to 3 weeks. One and three per cent in alcohol repelled carpet beetle larvae for 3 weeks. M. Senkus, to Commercial Solvents Corp. U. S. Patent No. 2,415,047.

Metal Surface Germicide

Hypochlorite solutions containing 25 ppm. of available chlorine in contact for 2 minutes with *micrococci*, showed a maximum germicidal efficiency at pH 9.4, decreasing both above and below this value. When the chlorine content was varied from 50 to 200 ppm. for 1 minute the germicidal efficiency was found to be the same from pH 9 to 11. Spores of B. *subtilis* suspended in Ringer's solution and in 10 per cent milk gave results in agreement with Charlton and Levine. It is suggested that detergents used in conjunction with hypochlorites should have pH values between 10 and 11. C. M. Cousins and J. Wolf, *Proc. Soc. Applied Bact. 1946*, 15-19.

Rodenticide

A new rodenticide discovered in Germany in 1946 is called "Muritan" or "Promurit"; the active ingredient is N-*para*-chlorophenyl-diazothiourea. The laboratory method of preparation of the compound has been reported. Another new product of quite recent discovery is very promising, since if uneaten by the rodent, it decomposes and becomes harmless after about two weks. *Chem. Trade J. & Chem. Engineer 121*, 6 (1947).

Antifungal Agents

Solubilized undecylenic acid and the cationic agent, trimethyl cetyl ammonium pentachlorophenate, have remarkable fungicidal properties in combination, particularly in a mildly acid medium approximating the normal pH of the skin. These agents may be combined in ointments, or prepared in true solution, for treatment of fungus diseases of the skin. E. J. Foley and S. W. Lee, *J. Am. Pharm. Assoc., Sci. Ed. 36*, 198-202 (1947).

Mosquito Repellents

The Orlando laboratory, sponsored first by the Office of Scientific Resaerch and Development and more recently by the U. S. Army, has tested more than 6000 chemicals as insect repellents. The average repellent time for a few of the more active chemicals in undiluted form is shown in the table. Addition of an inert ingredient such as alcohol usually reduces repellent time. Undiluted dimethyl phthalate may give a repellent time against *Aedes aegypti* mosquitoes of over 200 minutes, but with a mixture containing 25 per cent of dimethyl phthalate and 75 per cent ethyl alcohol, the repellent time averages only about 30 minutes.

Repellent Time in Minutes against

Material	*Aedes aegypti*	*Anopheles quadrimaculatus*	*Stamoxys calcitrans*
Dimethyl phthalate	247	108	38
"Rutgers 612"	338	54	46
Indalone	141	42	192
"6-2-2"	271	147	189
"NMRI-448"	282	—	—
Citronella	79	15	54

For experimental purposes the Orlando laboratory has found the following satisfactory for many of the liquid repellents: Stearic acid 40 grams, potassium carbonate 0.6 gram, glycerine 12 ml., water 68 grams, and liquid repellent 80 ml. B. V. Travis, *Am. Perfumer 50*, No. 2, 141-2 (1947).

Pyrethrin Stabilizer

Pyrethrin - containing insecticides are stabilized against deterioration by light and air to inhibit the loss of killing power by the addition of 0.001 to 1 per cent of a 2,4,6-trialkyl phenol such as 2,4,6-tri-tert-butyl phenol. H. G. Smith and M. L. Hill, to Gulf Oil Corp. U. S. Patent No. 2,421,223.

Emulsifying Acaricides

In order to control mite or scrub typhus among the armed forces, emulsified liquid acaricides appeared the most practical. An emulsifier was needed that would give satisfactory emulsions in soft, hard, and sea water. Tests of emulsion stability were made with the following emulsifiers and acaricides in various combinations:

Emulsifiers

1. Polymerized glycol monolaurate
2. Polymerized glycol monoöleate
3. Polymerized glycol monostearate
4. Polyalkylene glycol stearate
5. Polyethylene glycol aryl ether (Triton X-100)
6. Sorbitan monostearate, polyoxyalkylene derivative (Tween 60)
7. Sorbitan monoöleate, polyoxyalkylene derivative (Tween 80)
8. Equal parts sorbitan monolaurate (Span 20) and sorbitan monolau-

rate, polyoxyalkylene deriv. (Tween 20)
9. Equal parts sorbitan monostearate (Span 60) and Tween 60
10. Equal parts Span 80 and Tween 80.

Acaricides
1. Benzyl benzoate
2. Dimethyl phthalate
3. Dibutyl phthalate
4. 2-ethyl-1, 3-hexanediol (Rutgers 6-12)
5. Butyl 3, 4-dihydro-2, 2-dimethyl-4-oxo-1, 2-pyran-6-carboxylate (Indalone)
6. 2-Phenylcyclohexanol
7. Equal parts of dimethyl phthalate, Rutgers 6-12, and Indalone
8. Equal parts of dimethyl phthalate, Rutgers 6-12, and benzyl benzoate

With benzyl bezoate, dimethyl phthalate, and dibutyl phthalate in all types of water, emulsifiers 1, 2, and "Span 80" were best. Benzyl benzoate was more readily emulsified than dimethyl phthalate. Tween 80 and emulsifier 4 gave satisfactory emulsions with an equal part mixture of benzyl benzoate and dibutyl phthalate, which is better than benzyl benzoate alone for impregnating clothing. 2-Phenylcyclohexanol was emulsified well by emulsifier 2, Tween 60 and Tween 80; a mixture of dimethyl phthalate, Rutgers 6-12, and Indalone, by emulsifier 2; dimethyl phthalate by emulsifiers 1 and 2. These particular acaricides are also mosquito repellents. The emulsifiers need further large-scale testing under field conditions, also testing for possible irritation and toxicity to man. H. J. Fluno, H. A. Jones, and F. M. Snyder, *J. Econ. Entomol.* 39, 810-11.

Toxicity and Particle Size

In laboratory and field tests, the toxicity of DDT in water suspensions increased with reduction of particle size. The laboratory method of exposing flies in cages to DDT residues can be used to determine many phases of the toxicity of DDT formulations. N. Woodruff and N. Turner, *J. Econ. Entomol. 40,* 206-11.

Activation of Insecticides

Insecticides with pyrethrum and a terpene thiocyanoacetate in a carrier liquid are activated to greater killing power by phenol, toluene, para-tert-butyl pyrocatechol, pyrogallol, and naphthol. J. N. Borglin, U. S. Patent No. 2,420,809.

Rotenone Color Reaction

The blue color that rotenone gives with vanillin and sulfuric acid occurs also when cholic or desoxylic acid, stigmasterol, ergosterol, colophony, *alpha*-naphthol, phenanthrene, anthracene, or carbazol are condensed with vanillin. Color reactions are listed by means of which these substances can be distinguished from rotenone. E. P. Haussler, *Mitt. Gebiete Lebensm. Hyg. 38,* 1-4; through *Chem. Abs.*

Insecticidal Activity

A number of analogs of DDT were synthesized and their insecticidal activity measured. Correlations were attempted between insecticidal activity and ease of loss of hydrogen chloride from the compounds in alkaline solution. The insecticidal activity of the numerous compounds prepared varied according to their structure but did not parallel the ease of loss of hydrogen chloride. P. Muller, *Helv. Chim. Acta 29,* 1560-80; through *Chem. Abs.*

Fly Control in Manila

DDT in diesel oil was applied by airplane four times in three months to control adult flies. The dosage was approximately 0.5 pound per acre. The fly population was reduced nearly to zero, but the applications were spaced too widely to produce cumulative effects. Experience with a ground sprayer indicated that treatment at 10-day intervals would give satisfactory results. J. T. Griffiths, *J. Econ. Entomol. 39,* 750-5.

Rodent and Insect Poison

A solution of arsenic trioxide in sorbitol or manitol gives a water-soluble palatable composition toxic to rodents and insects. E. F. Sennewald, U. S. Patent No. 2,420,568.

Hypochlorite Sterilization

According to the literature, hypochlorite is considered germicidal in solution by virtue of the undissociated hypochlorous acid. It was found that spores of *B. subtilis,* dried in a milk film on a metal surface, behaved just as when suspended in solution. Low pH was more germicidal than a high pH solution. The percentage survival of spores in contact with a solution containing 50 p.p.m. of available chlorine for 5 minutes at pH 7, 7.85, and 9, was 0.2, 2.5, and 80, respectively. *Staphylococcus aureus* and thermoduric micrococci both behave differently, showing optimum kills at pH 9.4, 9.8, 10.5, and 11, with concentrations of 25, 50, 100, and 200 p.p.m. of available chlorine, respectively.

The explanation suggested is that the living proteinlike cell wall of vegetative bacteria, as distinct from the refractile cell wall of spores can absorb a protein film derived from the milk, and perhaps organic matter of the medium. The hypochlorite solution must react with this protein film, forming a chloramine, before it can reach the vegetative cell. This theory seems to explain survival curves. The importance of using a not too alkaline detergent in conjunction with hypochlorites for sterilization of dairy utensils is stressed. The pH of the combined solution should not exceed 10-11. J. Wolf and C. M. Cousins, *Nature 158,* 755.

Factors Affecting Mould

Study of the influence of temperature and humidity on mould growing on a variety of substances, indicated that growth increased in severity and occurred over a wider range of temperature with a rise in humidity up to 100 per cent. At each humidity value, the growth showed an optimal temperature range. No growth occurred at 60 per cent relative humidity, and only slight growth at 70 per cent, both at 86° F. Growth on cotton duck, both untreated and treated with copper naphthenate, was accelerated by the presence of free moisture. Removal of the constituents of unbleached cotton duck by leaching in water, decreased the extent of rotting, whereas leaching with solvent had no effect. Addition of various nutrient solutions to the water-leached fabric did not promote growth to the same extent as did the untreated fabric. W. I. Illman and M. W. Weatherburn, *Am. Dyestuff Reporter 36,* 343-4, 369-72 (1947).

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Structure of Insecticides

Correlations between chemical structure and insecticidal activity of compounds resembling DDT have been studied over a three-year period at the Boyce Thompson Institute, Yonkers, N. Y. Many compounds such as substituted diphenyl trichloroethanes and diphenyl dichlorethylene were synthesized for this purpose.

General relationships between structure and insect toxicity may be summarized as follows: (1) Symmetrical 4,4′ disubstituted analogs with halogen, methoxy, ethoxy, or methyl groups are active. (2) An unsymmetrical analog with substituents in the 4 or 4,4′ positions is intermediate in activity between the two symmetrical compounds of which it is a hybrid. (3) When substituents in the 4,4′ positions exceed a critical size, volume being apparently more important than weight, the analog has little or no activity. (4) Analogs with methoxy or ethoxy groups in 4,4′ positions and the spatial substituents such as methyl chloride, methoxy, in other positions, are less active than those with methoxy or ethoxy only at 4,4′. (5) Tetrasubstituted analogs with no substituent in 4 or 4′, are inactive.

The activities of DDT-like compounds cannot be explained on their abilities to lose hydrogen chloride, or on the presence of a lipoid-soluble group. The presence of certain substituents in the 4,4′ positions and the spatial relationships of the parts of the molecule are considered important. Insects are, perhaps, most susceptible to these compounds because the compounds can easily enter the nervous system and vital organs. Many of the compounds show some toxicity to warm-blooded animals. E. A. Prill, M. E. Synerholm, and A. Hartzell, Contrib. Boyce Thompson Inst. *14*, 341-53.

New Assay of Antiseptics

A new method for the assay of antiseptics and germicides is by the mercuric chloride index. The procedure is similar to the paper disk method of assaying antibiotics, except that 0.05 cc. of a 1:400 solution of mercuric chloride on a paper disk 15 mm. in diameter is taken as the standard of comparison. *E. coli* and *Staph. aureus* are used as test organisms. Various concentrations of the unknown are tried until the concentration producing the same zone of inhibition as the mercuric chloride standard, after 24 hours at 37° C., is found for each test organism. The relative potency is the average of the inverse values of these two concentrations. Taking the potency of 100 per cent mercuric chloride as 1, the relative mercuric chloride indices of the following were, for mercuric cyanide 5.0, phenol 0.015, mercurochrome 0.0125, commercial 40 per cent formalin 0.1875, and commercial 3 per cent hydrogen peroxide solution 0.0075. F. J. Herrero, *Arch. farm. y bioquim. Tucuman* 2, 181-208.

Assay of Technical DDT

A method has been devised in which the sample of DDT is dissolved in absolute alcohol and then allowed to crystallize. Fifteen per cent of the DDT remains in the alcohol. Therefore with a 10-gram sample the percentage of pure DDT is obtained by weighing the crystals, multiplying by 10, and adding 15. Maximum deviation from the British Standards Institute method is 4 per cent. If the melting point of the crystals is above 104° C. and the sample contains 65 per cent of pure DDT by this method, the material may be considered satisfactory technical DDT. Free acid should also be below 0.05 per cent. B. Gosh, *J. & Proc. Inst. Chem. 18*, Pt. 1, 44-51.

Makes Rugs Skidproof

A plastic compound "Rug-Seez," claimed to make rugs skidproof with one application, has been developed by Chemo-Plastics Co., Hempstead, N. Y. The liquid comes in a consumer-size can ready for application. The compound may be applied to the backs of axminster, chenille, velvet, wilton, wool, cotton fiber, and other types of novelty rugs according to the company, and will not mar the floor or harm the rug. Tests indicate that frequent washings with water heated to 100° F., using an average laundry soap, will not affect the binding qualities of the compound.

Results with Antu

Antu is successful at a 2-3 per cent mixture in baits such as biscuit meal. As a tracking poison, 20-30 per cent is mixed with kaolin and sprinkled along runs or blown down burrows. The powder adhering to the feet and fur of the rodents is subsequently licked off and ingested in fatal doses. The powder is insoluble in water and can be sprinkled on water in shallow dishes where the rodents might drink. Both brown and black rats were killed by less than 2 grams of a 2 per cent bait. *Pharm. J. 158*, 319 (1947).

Flea Repellents

Many compounds were tested as flea repellents in the laboratory and in practical tests. Those found good by practical tests with clothing were *para*-isopropyl phenyl ethyl alcohol, 1, 2, 3, 4-tetrahydro-2-naphthol, and benzyl benzoate. Toxic effects to humans were not studied. J. P. Linduska, J. H. Cochran, and F. A. Morton, *J. Econ. Entomol. 39*, 767-9.

Inactivation of DDT

Several factors may contribute to the relatively rapid loss in effectiveness of DDT applied in safe dosages for the control of anopheline larvae. Of these, the two most important appear to be redistribution of the DDT due to wind and wave action, and precipitation of suspended DDT and adsorption of DDT by some part of the bottom-mud. Adsorption is relatively slow on mud and appears to be on the organic components of the mud only; sandy soils with a minimum of organic components are rather poor adsorbents. Materials more readily adsorbed than DDT might be mixed in to prevent adsorption of DDT itself. W. M. Upholt, U. S. Pub. Health Repts. *62*, 302-9 (1947).

Pest Control Adhesive

A pest control adhesive composition comprises a water-soluble, straight-chain, aliphatic amine containing at least 8 carbon atoms, and a cation-active germicidal dispersing agent. C. A. Littler, to Canadian Industries Ltd. Canadian Patent No. 442,209.

TESTING INSECTICIDE RESIDUES

(*From Page* 125)

knockdown caused by the reference insecticide occurs at 60 minutes in 12 days, it assumes an assigned value of 60. If the 50 per cent knockdown caused by the unknown insecticide occurs at 60 minutes in 6 days, it assumes an assigned value of 30. Assigned ratings are determined by a comparison of the assigned values. The assigned rating of the above unknown insecticide would be minus 30 since its assigned value was 30 points less than that of the reference insecticide.

Method II.—Instead of plotting 50 per cent knockdown values as such, this method is so designed that the reference insecticide will just give a 100 per cent knockdown on the initial date of the test period. All succeeding knockdown readings are taken at this same time-interval. This means that during succeeding tests, the decrease in knockdown efficiency can be readily observed. The 50 per cent knockdown time is the criterion for comparing the reference insecticide with the unknown. *Ratings are based upon the difference in time at which the toxicity of reference insecticide and of the unknown are reduced to a 50 per cent knockdown.*

Each day of the testing period has been arbitrarily assigned a value of five points. Readings of the assigned values are made from the graph at the time during the testing period at which a knockdown of 50 per cent is reached. If, for example, the unknown insecticide should at no time cause a 50 per cent knockdown of flies within the time period established for 100 per cent knockdown by the reference insecticide on the initial date of the test, it would be considered unsatisfactory. If, on the other hand, the knockdown of flies caused by the unknown insecticide should fall to 50 per cent in 4 days, it would assume an assigned value of 20. If the knockdown of flies by the reference insecticide should fall to 50 per cent in 11.8 days, it would assume an assigned value of 59.

The assigned ratings are determined by comparing the assigned values obtained with the reference and unknown insecticides. The above unknown insecticide with the assigned value of 20 would assume an assigned rating of minus 39 since it lost 50 per cent knockdown efficiency 39 assigned value points (59-20) before the reference insecticide. Plus ratings are obtained if the unknown insecticide provides a 50 per cent knockdown of flies for a longer period of time than the reference insecticide.

Mortality Values

THE test has been designed to give just 100 per cent 24 hour kills of flies as the initial date of the test at the suggested exposures to the reference insecticides. Since flies vary individually in resistance to toxicants, the average fly in the test group is represented in a 50 per cent kill. A 50 per cent kill will not follow on any one testing date, but may be determined to fall at a given point in time between the two dates at which the kill remains above and falls below 50 per cent. The points in time at which the unknown and reference insecticides cause 50 per cent kills may then be compared by the assigned values (5 points for each day). If the unknown insecticide should at no time cause a kill of 50 per cent of the flies, it would be considered unsatisfactory. If the kill of flies by the reference insecticide should fall to 50 per cent in 7.8 days, it would assume an assigned value of 39 (7.8x5). If the kill of flies by the unknown should fall to 50 per cent in 4.8 days, it would assume an assigned value of 24.

The assigned ratings express the difference in time at which the reference insecticide and the unknowns lose toxicity to 50 per cent. The above unknown with the value of 39 would assume an assigned mortality rating of minus 15 since it lost 50 per cent killing efficiency 15 value points before the reference insecticide. Plus mortality ratings would be obtained if the unknown should continue to cause the death of 50 per cent of the flies in the test groups for a longer period of time than the reference insecticide.

At times, during tests of toxic residues, the knockdown and/or kill of flies may fall below the 50 per cent level, return above 50 per cent on a later testing date and again fall below 50 per cent. In such cases, the assigned values could be determined from the graph, to lie between the last day the kill or knockdown remained above 50 per cent and the first day it remained below 50 per cent.

Discussion

MANY entomologists have developed methods of evaluating DDT residues. The majority of these methods involve large dosages of DDT (100 to 200 mgms.) on the test panels or cages and provide no standard of comparison—that is—with a standardized reference insecticide. The method herein presented was designed to abbreviate the length of the test period (which may be a year or more for the higher dosages) by (1) decreasing the dosage on the panel and (2) by controlling the exposure period. For mortality data, the exposure period is controlled by predetermining that exposure period which just gives a 100 per cent kill on the initial date of the test. The exposure period of speed of action or "knockdown" data is controlled by determining, on the initial date of the test, the time required to effect 100 per cent knockdown with the reference insecticide.

Certain methods of testing toxic residues give the test insects a choice of treated and untreated panels. The method presented in this paper compels the test insects to remain on the treated surface except during flight. A "No-choice" method is believed to give a more precise means of obtaining knockdown and mortality data.

Reference

Doner, M. H., 1947—Testing Insecticide Residues. A Review of Methods. Soap and Sanitary Chemicals *23* (7): 139-143-193.

ANTISEPTICS & DISINFECTANTS

(*From Page* 129)

carbon tetrachloride, 15 mls of sulphonated castor oil and 1.5 grams cetyl alcohol, made up to a total of 100 mls with water. The dilution required is 1 ml of either mixture to every 100 mls of 1 per cent hypochlorite solution. Both blends are reported to give odor

(*Turn to Page* 161)

Insecticide Act Regulations

U. S. D. A. Issues Regulations for enforcement of New Insecticide Act...sections dealing with shipments of experimental material and use of warning and caution statements liberalized

REGULATIONS for the enforcement of the new Federal Insecticide, Fungicide and Rodenticide Act of 1947 were issued by the U. S. Department of Agriculture September 29, and applications for the registration of economic poisons under the Act are reported to have been forwarded to manufacturers of products subject to the Act.

The registration deadline for rodenticides and herbicides is set for December 25, 1947. Manufacturers of other products (including insecticides and fungicides) must register them with the Department by June 25, 1948. Manufacturers were urged by the U.S.D.A. to submit applications promptly in order to avoid the usual log-jam at deadline time.

The final and official draft of the regulations follows in general the proposed regulations issued on June 25. The final draft was not announced until comments and suggestions made at the public hearing in Washington on August 25 had been given full consideration. An extension of time permitted the filing of additional suggestions through September 8.

The most significant changes from the first draft of the regulations include permission for label statement to be in language other than English when product is for shipment outside the U. S. (Section 162.3). More specific language regarding products highly toxic to man is also called for in the final regulations. LD-50 tests are incorporated, and toxicity tests must be run on mice, rabbits and rats. (Section 162.7).

Simplification of the warning or caution statement is attained by leaving to registrant the decision whether a warning or caution statement is required. Definition of terms "Danger," "Warning" and "Caution" is eliminated. (Sec. 162.8). Liberalization of provisions for shipments of experimental material is made, and the requirement is removed which called for giving composition of experimental material in application for exemption permit. (Sec. 162.17).

The section relating to economic poisons intended for export was deleted, (Sec. 162.18 a), since this phase is covered by paragraph "b" of Section 3 of the Act. The remaining part of section 162.18 is amended by adding commercial laundries and cleaners to the list of exempted industries.

The full text of the regulations follows:

TITLE 7—AGRICULTURE
CHAPTER I—PRODUCTION AND MARKETING ADMINISTRATION (STANDARDS, INSPECTIONS, MARKETING PRACTICES)
PART 162—REGULATIONS FOR THE ENFORCEMENT OF THE FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT REGULATIONS

By virtue of the authority vested in the Secretary of Agriculture by the Federal Insecticide, Fungicide, and Rodenticide Act, approved June 25, 1947 (Pub. Law 104, 80th Cong.) and the Administrative Procedure Act (60 Stat. 237), the following regulations are hereby promulgated:

Sec.

(Pub. Law 104, 80th Cong., 60 Stat. 237)

§162.1 *Words in singular forms.* Words used in the singular form in these regulations shall include the plural, and vice versa, as the case may require.

§162.2 *Terms defined and construed.* All terms used in these regulations shall have the meaning set forth for such terms in the Act. In addition, such terms shall be construed as follows:

(a) *Act.* "Act" means the Federal Insecticide, Fungicide, and Rodenticide Act.

(b) *Director.* "Director" means the Director of the Livestock Branch, Production and Marketing Administration, United States Department of Agriculture, or any officer or employee to whom he has heretofore lawfully delegated or to whom he may hereafter lawfully delegate the authority to act in his stead.

(c) *Economic poison.* "Economic poison" includes insecticides, fungicides, rodenticides and herbicides. A product shall be deemed to be an economic poison regardless of whether intended for use as packed or after dilution or mixture with other substances, such as carriers or baits. Products intended only for use after further processing or manufacturing, such as grinding to dust form or more extensive operations, shall not be deemed to be economic poisons. Substances which have recognized commercial uses other than uses as economic poisons shall not be deemed to be economic poisons unless such substances are (1) specially prepared for use as economic poisons, or (2) labeled, represented, or intended for use as economic poisons, or (3) marketed in channels of trade where they will presumably be purchased as economic poisons.

(d) *Fungicide.* "Fungicide" includes but is not limited to:

(1) Plant fungicides, seed fungicides, fungicidal wood preservatives, and mildew and mold preventatives,

(2) Disinfectants, antiseptics and sterilizers, except those for use only on or in living man or other animals.

The term "fungicide" shall not include algaecides.

(e) *Active ingredient.* An "active ingredient" is an ingredient which:

(1) is capable in itself, and when used in the same manner and for the same purposes as directed for use of the product, of preventing, destroying, repelling, or mitigating insects, fungi, rodents, weeds or other pests; and

(2) is present in the product in an amount sufficient to add materially to its effectiveness; and

(3) is not antagonistic to the activity of the principal active ingredient;

Provided, however, that the Director may require an ingredient to be designated as an active ingredient if, in his opinion, it sufficiently increases the effectiveness of the economic poison to warrant such action.

(f) *Rodent.* "Rodent" means any animal of the order Rodentia, including, but not limited to, rats, mice, rabbits, gophers, prairie dogs and squirrels.

(g) *Official investigator.* "Official investigator" means any employee or agent of the Department of Agriculture or the Treasury Department authorized by the Director or by the Secretary of the Treasury to make investigations in connection with enforcement of the Act.

§162.3 *Administration.* The Director is authorized to take such action as, in his discretion, may be necessary in the administration and enforcement of the Act and these regulations.

§162.4 *Language to be used.* All statements, words and other information required by the Act or regulations to appear on the label or labeling of any economic poison shall be in the English language, provided that in the case of articles intended solely for distribution to points outside the continental United States the appropriate foreign language may be used in lieu of the English language.

§162.5 *Omission of label or labeling.* The omission of a label or labeling from any economic poison shall not affect any provision under the Act or these regulations with respect to any statement required to appear on such label or labeling.

§162.6 *Label.*

(a) *Contents of label.* The label of every economic poison must show, clearly and prominently, the name of the product; the name and address of the manufacturer, the registrant, or person for whom manufactured; the net contents; the ingredient statement; and a warning or caution statement which may be necessary to prevent injury to living man and other vertebrate animals, useful vegetation and useful invertebrate animals. The label of any economic poison which is highly toxic to man must also contain the skull and crossbones, and the word "poison" in red on a contrasting background and the antidote statement in immediate proximity thereto. The antidote statement shall include directions to call a physician immediately. The label of every economic poison, if necessary to prevent injury to living man and other vertebrate animals, useful vegetation and useful invertebrate animals, must contain an appropriate warning or caution statement as required in Section 162.9 hereof.

(b) *Name and address of manufacturer.* An unqualified name and address given on the label shall be considered as the name and address of the manufacturer. If the registrant's name appears on the label and the registrant is not the manufacturer, or if the name of the person for whom the economic poison was manufactured appears on the label, it must be qualified by appropriate wording such as "Packed for * * *," "Distributed by * * *," or "Sold by * * *," to show that the name is not that of the manufacturer. When a person manufactures an economic poison in two or more places or in a place different from the manufacturer's principal office, the actual place of manufacture of each particular package need not be stated on the label except when, under the special circumstances existing, the failure to name it may be misleading to the public. The address of the manufacturer, registrant or person for whom manufactured shall include the street address, if any, unless the street address is shown in a current city directory or telephone directory.

(c) *Name, brand or trademark of economic poison.* The name, brand or trademark of the economic poison appearing on the label shall be that under which the economic poison is registered.

(d) *Net content.*

(1) The net content shall be exclusive of wrappers or other material, and shall be deemed to be average content unless stated as a minimum quantity.

(2) Net content shall be stated in the terms of weight or measure in general use by consumers and users of the economic poison to give accurate information as to the quantity of the economic poison. If there is no general use, the net content statement shall be in terms of liquid measure if the product is a liquid, and in terms of weight if it is a solid, semi-solid, viscous, or a mixture of liquid and solid. Statements of liquid measure shall be in terms of the United States gallon, quart, pint, and fluid ounce, at 68° F. The statements of weight shall be in terms of avoirdupois pound and ounce. All statements of net content shall be in terms of the largest unit present.

(3) If the contents are stated as a minimum quantity, variation below is not permissible and variation above shall not be unreasonably large.

(4) If the contents are not stated as a minimum quantity, variation shall be permitted only to the extent that it represents deviations unavoidable in good packing practice. The average quantity in the packages in a shipment shall not fall below the average quantity stated, nor shall there be any unreasonable variation from the average in the contents of any package.

§162.7 *Ingredient statement.*

(a) *Location of ingredient statement.* The ingredient statement must appear on that part of the label displayed under customary conditions of purchase except in cases where the Director determines that, due to the size or form of the container a statement on that portion of the label is impractical, and permits such statement to appear on another side or panel of the label. When so permitted, the ingredient statement must be in larger type and more prominent than would otherwise be possible. The ingredient statement must run parallel with other printed matter on the panel of the label on which it appears and must be on a clear contrasting background not obscured or crowded.

(b) *Names of ingredients.* The well-known common name of the ingredient must be given or, if the ingredient has no common name, the correct chemical name. If there is no common name and the chemical composition is unknown or complex, the Director may permit the use of a new or coined name which he finds to be appropriate for the information and protection of the user. If the use of a new or coined name is permitted, the Director may prescribe the terms under which it may be used. A trademark or trade name may not be used as the name of an ingredient except when it has become a common name.

(c) *Percentages of ingredients.* Percentages of ingredients shall be determined by weight and the sum of the percentages of the ingredients shall be 100. Sliding scale forms of ingredient statements shall not be used.

(d) *Designation of ingredients.*

(1) Active ingredients and inert ingredients shall be so designated, and the term "inert ingredients" shall appear in the same size type and be equally as prominent as the term "active ingredients."

(2) If the name but not the percentage of each active ingredient is given, the names of the active and inert ingredients shall, respectively, be shown in the descending order of the percentage of each present in each classification and the name of each ingredient shall be given equal prominence.

(e) *Active ingredient content.* As long as an economic poison is subject to the Act the percentages of active ingredients declared in the ingredient statement shall be the percentages of such ingredients in the economic poison.

§162.8 *Economic poisons highly toxic to man.* The Secretary hereby finds that economic poisons which fall within any of the following categories when tested on the laboratory animals, mice, rats and rabbits, are highly toxic to man or contain substances or quantities of substances highly toxic to man within the meaning of the Act:

(a) *Oral toxicity.* Those which produce death in half or more than half the animals of any species at a dosage of 50 milligrams at a single dose, or less, per kilogram of body weight when administered orally to ten or more such animals of each species.

(b) *Toxicity on inhalation.* Those which produce death in half or more than half of the animals of any species at a dosage of 200 parts or less by volume of the gas or vapor per million parts by volume of air when administered by continuous inhalation for one hour or less to ten or more animals of each species, provided such concentration is likely to be encountered by man when the economic poison is used in any reasonably foreseeable manner.

(c) *Toxicity by skin absorption.* Those which produce death in half or more than half of the animals (rabbits only) tested at a dosage of 200 milligrams or less per kilogram of body weight when administered by continuous contact with the bare skin for 24 hours or less to ten or more animals.

Provided, however, that the Director may, upon application and after opportunity for hearing, exempt any economic poison which meets the above standard

but which is not in fact highly toxic to man, from the requirements of the Act and these regulations with respect to economic poisons highly toxic to man.

§162.9 *Warning or caution statement.* The warning or caution statement, when necessary to prevent injury to living man and other vertebrate animals, useful vegetation and useful invertebrate animals, must appear on the label in a place sufficiently prominent to warn the user, and must state clearly and in nontechnical language the particular hazard involved in the use of the economic poison, e.g., ingestion, skin absorption, inhalation, inflammability or explosion, and the precautions to be taken to avoid accident, injury, or damage.

The word "POISON" in red on a contrasting background in immediate proximity to the skull and crossbones and an antidote, including directions to call a physician immediately, shall appear on all economic poisons highly toxic to man.

§162.10 *Registration.*

(a) *Eligibility.* Any manufacturer, packer, seller, distributor or shipper of an economic poison is eligible as a registrant and may register such economic poison.

(b) *Effect of registration.* If an economic poison is registered under the Act no further registration under the Act is required, provided that:

(1) The product is in the manufacturer's or registrant's original unbroken immediate container; and

(2) The claims made for it and the directions for its use do not differ in substance from the representations made in connection with registration.

(c) *Procedure for registration.* Applications for registration should be addressed to Insecticide Division, Livestock Branch, Production and Marketing Administration, United States Department of Agriculture, Washington 25, D. C. Application forms will be furnished upon request. Applications should be submitted as far in advance as possible and at least 30 days before the time when it is desired that registration take effect. No fees are charged for registration.

(d) *Effective date of registration.* Registration of an economic poison shall become effective on the date the notice of registration is issued.

(e) *Responsibility of a registrant.* The registrant is responsible for the accuracy and completeness of all information submitted in connection with his application for registration of an economic poison.

(f) *Changes in labeling or formulae.*

(1) Changes in substance in the labeling or changes in the formula of a registered economic poison must be submitted in advance to the Insecticide Division, Livestock Branch, Production and Marketing Administration, United States Department of Agriculture, Washington 25, D. C. The registrant must describe the exact changes desired and the proposed effective date and, upon request, shall submit a description of tests which justify such changes.

(2) After the effective date of a change in labeling or formula the product shall be marketed only under the new claims or formula, except that a reasonable time may be permitted by the Director to dispose of properly labeled stocks of old products.

(g) *Claims must conform to registration.* Claims made for an economic poison must not differ in substance from representations made in connection with registration, including representations with respect to effectiveness, ingredients, directions for use, or pests against which the product is recommended.

§162.11 *Guarantee of economic poisons.*

(a) *By whom given.* Any manufacturer, distributor, wholesaler, or other person residing in the United States may furnish to any person to whom he sells an economic poison a guarantee that the economic poison was lawfully registered at the time of sale and delivery to such person, and that the economic poison complies with all the requirements of the Act and of these regulations.

(b) *Reference to guarantee.* No reference to or suggestion that a guarantee of registration has been given shall be made in the labeling of any economic poison.

(c) *Contents of guarantee.* In order to afford effective protection, each guarantee must:

(1) Be signed by and contain the name and address of the person giving it; and

(2) State that the economic poison was lawfully registered at the time of sale and delivery and that it complies with all other requirements of the Federal Insecticide, Fungicide, and Rodenticide Act.

(d) *Scope of guarantee.* A guarantee may be (1) limited to a specific shipment or other delivery of a product, in which case it may be a part of or attached to the invoice or bill of sale covering such shipment or delivery, or (2) general and continuing, in which case, in its application to any shipment or other delivery of a product, it shall be considered to have been given at the date when such product was shipped or delivered by the person giving the guarantee.

(e) *Expiration of guarantee.* Any guarantee shall expire when the product is repacked or relabeled by the purchaser or when it becomes otherwise in violation of the Act or these regulations *after shipment or other delivery* by the person who gave such guarantee.

(f) *Forms of guarantee.* The following are suggested forms of guarantee:

(1) [Limited form for use on invoice or bill of sale].

..... hereby guarantees
(name of guarantor)
that the economic poison herein listed is lawfully registered with the Secretary of Agriculture and that the same complies with all requirements of the Federal Insecticide, Fungicide, and Rodenticide Act.

.....
Signature and postoffice address of guarantor

.....
Date

(2) [General and continuing form].

The economic poisons comprising each shipment or other delivery hereafter made by .....,
(name of guarantor)
to or on the order of.....
(name and
.....
address of person receiving)
.....are hereby guar-
(guarantee)
anteed to be lawfully registered with the Secretary of Agriculture and to comply with all requirements of the Federal Insecticide, Fungicide, and Rodenticide Act, as of the date of such shipment or delivery.

.....
Signature and postoffice address of guarantor

.....
Date

§162.12 *Coloration and Discoloration.* The white economic poisons hereinafter named shall be colored or discolored in accordance with this regulation. The hues, values, and chromas specified are those contained in the Munsell Book of Color, Munsell Color Company, 10 East Franklin Street, Baltimore, Maryland.

(a) *Coloring agent.* The coloring agent must produce a uniformly colored product not subject to change in color beyond the minimum requirements specified in these regulations during ordinary conditions of marketing or storage, and must not cause the product to be ineffective or result in its causing damage when used as directed.

(b) *Arsenicals and barium fluosilicate.* Standard lead arsenate, basic lead arsenate, calcium arsenate, magnesium arsenate, zinc arsenate, zinc arsenite, and barium fluosilicate shall be colored any hue, except the yellow-reds and yellows, having a value of not more than 8 and a chroma of not less than 4, or shall be discolored to a neutral lightness value not over 7.

(c) *Sodium fluoride and sodium fluosilicate.* Sodium fluoride and sodium fluosilicate shall be colored blue or green having a value of not more than 8 and a chroma of not less than 4, or shall be discolored to a neutral lightness value not over 7.

(d) *Exception.* Notwithstanding the provisions of subsections (b) and (c) of this Section the Director, *after* opportunity for hearing, may permit other hues to be used for any particular purpose if the prescribed hues are not feasible for such purpose and if such action will not be injurious to the public.

§162.13 *Adulteration -- Valuable constituent.*

(a) A valuable constituent will be considered as wholly abstracted whenever the designation or representation of the product imports its presence therein and such constituent has been wholly omitted therefrom in the preparation of the product or has been wholly removed from the completed product.

(b) A valuable constituent will be considered as partly abstracted whenever the designation or representation of the product imports its presence therein, and such constituent is not present in the usual or customary amount or in the amount indicated in the labeling.

§162.14 *Misbranding.*

(a) *False or misleading statements.* Among representations in the labeling of an economic poison which render it misbranded are the following:

(1) A false or misleading statement concerning composition of the product.

(2) A false or misleading statement concerning the effectiveness of the product as an economic poison or device.

(3) A false or misleading statement about the value of the product for purpose other than as an economic poison or device.

(4) A false or misleading comparison with other economic poisons or devices.

(5) A false or misleading representation as to the safety of the economic

poison or of its ingredients including a statement such as "non-poisonous," "non-injurious," or "non-hazardous" unless the product is in fact safe under all conditions.

(6) Any statement directly or indirectly implying that the economic poison or device is recommended or endorsed by any agency of the Federal Government.

(7) The name of an economic poison which contains two or more ingredients if it suggests the name of one or more but not all such ingredients, even though the names of the other ingredients are stated elsewhere in the labeling, provided, however, that it is permissible, when the percentage of each active ingredient is given in the name, to omit reference in the name to the inert ingredients.

(8) Prominent reference in the labeling to one or more active ingredients without giving their percentages in immediate proximity thereto or without giving equal prominence to the other active ingredients or to the presence of inert ingredients.

(9) A true statement used in such a way as to give a false or misleading impression to the purchaser.

(b) *Justification of false and misleading statements are not permitted.*

(1) The use of any false or misleading statement on any part of the labeling, given as the statement or opinion of any person or based upon such statement or opinion shall not be justified, nor may such statement be justified by the fact that the statement or opinion is actually that of such person.

(2) The use of a false or misleading statement in the labeling cannot be justified by an explanatory statement.

§162.15 *Enforcement.*

(a) *Collection of samples.* Samples of economic poisons and devices shall be collected by official investigators or by any employee of the Federal Government, or of a State, territory, or political subdivision who has been duly designated by the Director.

(b) *Examination of samples.* Methods of examination of samples shall be those adopted and published by the Association of Official Agricultural Chemists, where applicable, and such other methods as may be necessary to determine whether the product complies with the law.

(c) *Notice of apparent violation.*

(1) If from an examination or analysis an economic poison or device appears to be in violation of the Act, a notice in writing shall be sent to the person against whom criminal proceedings are contemplated, giving him an opportunity to offer such written explanation as he may desire. The notice shall state the manner in which the sample fails to meet the requirements of the Act and the regulations.

(2) Any such person may, in addition to his reply to such notice, file within 20 days of its receipt a written request for an opportunity to present his views orally in connection therewith.

(3) No notice or hearing shall be required prior to the seizure of any economic poison or device.

§162.16 *Notice of judgment.* Publication of judgments of the courts in cases arising under the criminal or seizure provisions of the Act shall be made in the form of notices, circulars, or bulletins as the Director may direct.

§162.17 *Shipments for experimental use.*

(a) *Articles for which no permit is required.*

(1) A substance or mixture of substances being put through tests in which the purpose is only to determine its value for economic poison purposes or to determine its toxicity or other properties, and where the user does not expect to receive any benefit in pest control from its use is not considered an economic poison within the meaning of Section 2a of the Act and Section 162.2 (c) of these regulations. Therefore, no permit under this Act is required for its shipment.

(2) An economic poison shipped or delivered for experimental use by or under the supervision of any Federal or State agency authorized by law to conduct research in the field of economic poisons shall not be subject to the provisions of the Act and these regulations.

(b) *Articles for which permit is required.*

(1) An economic poison shipped or delivered for experimental use by other qualified persons but not under the supervision of a Federal or State agency authorized by law to conduct research in the field of economic poisons, shall be exempt from the provisions of the Act and of these regulations, provided that a permit for such shipment or delivery is obtained prior thereto. Permits will be of two types, specific and general. A specific permit will be issued to cover a particular shipment on a specified date to a named person. A general permit will be issued to cover more than one shipment over a period of time to different persons.

(2) All applications for permits covering shipments for experimental use must be signed by the shipper or person making delivery and must contain the following:

(i) Name and address of shipper and place or places from which shipment will be made.

(ii) Proposed date of shipment or proposed shipping period not to exceed one year.

(iii) Identification of material to be covered by permit which should apply to a single material or group of closely allied materials.

(iv) Approximate quantity to be shipped and types of tests such as greenhouse, orchard, or field.

(v) A signed statement whether the product is sold or is delivered without cost.

(vi) A signed statement that the economic poison is intended for experimental use only.

(vii) Proposed labeling which, in addition to other statements, must state that the product is for experimental use only.

(c) *Cancellation of permits.* Any permit for shipment for experimental use may be cancelled at any time for any violation of the terms thereof.

§162.18 *Exemption.* Any economic poison specified in Section 162.12 of these regulations which is intended solely for use by a textile manufacturer or commercial laundry, cleaner or dyer as a mothproofing agent, which would not be suitable for such use if colored and which will not come into the hands of the public except when incorporated into a fabric, shall be exempt from the requirements of Section 3(a)(4) of the Act and Section 162:12 of these regulations.

These regulations shall become effective thirty days after publication thereof in the Federal Register.

Issued this day of September 1947.

.....

(Secretary of Agriculture)

masking, coupled with resistance to the chemical action of the hypochlorite, non-toxicity in the required concentration, and non-interference with bactericidal action. (3)

One of the half-dozen most popular British antiseptics is "T.C.P.," a pale yellow fluid with a pungent odor of the characteristic salicylic/hypochlorite type. This is described on the label as "a solution of halogenated phenolic bodies in water, made from the following ingredients: chlorine 0.4 per cent; iodine 0.11 per cent; bromine, a minute trace; phenol 0.63 per cent; salicylic acid 0.045 per cent; with the partial elimination of the ionisable halides." Further described as "stable, non-toxic, non-caustic, analgesic, antithermic, endosmotic, keratoplastic and non-hæmostatic," there is no doubt about its popularity with a considerable and discriminating section of the public, in spite of its all-pervasive and persistent odor. T.C.P. is a product of British Alkaloids Ltd.

The comparative activities of the different halogens and of their compounds with the phenols have been studied by various workers. According to Dean and Appleyard (4), the bromoxylenols are even more effective than the chlorxylenols; towards S. *aureus* the activities are in the ratio of about 20:33. A proportion of less than 0.25 parts per million of free bromine was found by Tanner and Pitner (5) to be sufficient to kill cultures of S. *aureus*, S. *albus*, *Es. coli* and *Eb. typhi* in from fifteen to thirty seconds at room temperature. Slightly higher concentrations were required to kill pathogenic yeasts. Mold spores were killed by concentrations of from 5 to 30 parts per million; spores of aerobic bacteria required from 40 to 220 parts per million at a pH of 3.5 to 4.0, and from 100 to over 450 parts per million at a pH of 6.8 to 7.82.

In an investigation of the action upon dried anthrax spores of halogens, E. Hailer and U. v. Bockelberg (6) found the toxic effect to follow the order I > Cl > Br. A solution of free iodine was found to be more effective than one in potassium iodide.

It seems to me quite possible that a still more widely effective germicide for general household and personal use could be evolved as a result of the intensive study and comparison of the various groups enumerated.

(To Be Concluded)

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WASHROOM SPECIALTIES

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A.C.S. MEETING

(From Page 43)

moths did not mature on samples of the wool washed in the ordinary washing solution. However, unwashed wool controls were completely consumed by the larvae in the test.

AN improved method of synthesizing benzyl cinnamate, a compound used in perfumes, was reported by M. Martin Maglio, Vestal Laboratories, Inc., St. Louis, in a paper titled "The Uses and Preparation of Benzyl Cinnamate". Dr. Maglio described an original preparation of the chemical in which a naturally occurring product, methyl cinnamate, is reacted with benzyl alcohol in the presence of a catalyst to form benzyl cinnamate and methyl alcohol. Benzyl cinnamate is used in the manufacture of heavy perfumes for cosmetics and is a good fixative.

No papers on sanitizing agents, waxes, or polishes were presented at the 112th meeting of the American Chemical Society. There were no papers on insect repellents and the papers on insecticides were read as part of a symposium on insecticides in food production by the Division of Agricultural and Food Chemistry. While these papers stressed agricultural insecticides, some of the papers offered considerable information on insecticides in general and are abstracted in this report.

Commenting on "The Residual Action of Organic Insecticides", Elmer E. Fleck, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, USDA, Beltsville, Md., stated that the residual action of non-volatile organic insecticides is governed largely by their resistance to chemical change under field conditions. Pyrethrum is most subject to chemical change through oxidation and polymerization reactions greatly accelerated by light.

Rotenone has been shown to oxidize readily when in solution, and to give products ineffective as insecticides. Pure crystaline rotenone oxidizes readily when dusted and exposed to sunlight and inhibitors of this oxidation have not proven practical. However, the formation of dihydrorotenone, one of the oxidation products is said to prolong the residual action and increase the toxicity to some insects.

DDT must not be dissolved in alkaline solutions and catalysts such as iron must be avoided. Oxidation of DDT is speeded up by ultraviolet light which also induces other reactions in the absence of air, the extent depending on the nature of the solvent.

Speaking on "Hexaethyl Tetraphosphate and Tetraethyl Pyrophosphate", S. A. Hall and Martin Jacobson, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, Md., explained that contrary to statements made by its German discoverers, hexaethyl tetraphosphate hydrolyzes, not to ethanol and orthophosphoric acid, but to a mixture of diethyl and monoethyl orthophosphoric acids.

Non-distillable liquid products corresponding to tetraethyl pyrophosphate were made by the Schrader and Woodstock methods and exhibited higher activity than hexaethyl tetraphosphate. The products possess similar physical properties when made by either method but higher biological activity when made by the Schrader process.

Distillable tetraethyl pyrophosphate (essentially a pure compound) was prepared by two different methods and was also isolated from non-distillable products, including so-called hexaethyl tetraphosphate. It is 3 to 5 times as active as hexaethyl tetraphosphate and appears to be the active ingredient of all the non-distillable products described. In water it hydrolyzes spontaneously to diethyl orthophosphoric acid. This chemical fact is important in the practical application of the product, since its toxicity vanishes rapidly.

In a paper on "The Determination of the Gamma Isomer Content of Benzene Hexachloride", by C. V. Bowen and M. A. Pogorelskin, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, USDA, a cryoscopic method was presented for the determination of the gamma isomer content of mixtures of the isomers of technical benzene hexachloride. The method can be carried out with simple equipment available to any laboratory and requires only a short time. It involves only determining the depression of the freezing point of pure gamma isomer by the sample and by the same weight of alpha isomer.

A STUDY has been made of a number of mixtures of liquefied gases which might be suitable for low-pressure aerosols with gage pressures as low as 25 pounds per square inch and is reported upon in a paper titled "Possible Propellants for Use in Liquefied Gas Aerosols" by R. A. Fulton, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Beltsville, Md. The compounds investigated include chloro and fluoro derivatives of methane and ethane, such as methylene chloride, dichlorodifluoromethane, trichlorofluoromethane, monochlorodifluoroethane (Genetron-100) and difluoroethane. This study includes the pressure - temperature relationship of the mixed gases together with the compatibility of the mixed gases with some of the solvents used in aerosol formulas.

Methods of preparation and comparison of the insecticidal activities of the new class of insecticides of the piperonyl cyclonene type which are usually low in toxicity to man and animals were described in a report presented by Dr. Oscar F. Hedenburg, Mellon Institute, Pittsburgh, and Dr. Herman Wachs, Dodge & Olcott, Inc., New York. The synergistic properties typical of these compounds when in combination with pyrethrins was also discussed.

Another paper by these same authors describes the "Insecticidal Properties of Methylenedioxyphenyl Cyclohexenones". It was pointed out that alkyl - 5 - (3, 4-methylenedioxyphenyl) - 3 - cyclohexene - 5 - ones were prepared and were found to be of definite value where they are used without additions, but they are of main interest because of their ability to synergize the action of pyrethrins. The methylenedioxyphenyl cyclohexenones are highly toxic to insects, but share with the pyrethins the property of being practically non - toxic to warmblooded animals (MLD: 7.5 gms. per kg.)

FDA TEST

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TRADE NEWS . . .

AEPCO Washington Meeting

Enforcement representatives from more than 38 states are expected to be present at the first annual meeting of the newly-formed Association of Economic Poisons Control Officials being held October 19, 1947 at the Hotel Shoreham, Washington. The objectives of the association will be discussed by Dr. J. L. St. John, Div. of Chemistry, State of Washington. Others on the program will be W. G. Reed, USDA, L. S. Hitchner, Agricultural Insecticide and Fungicide Ass'n., H. W. Hamilton, White Tar Div., Koppers Co., Kearny, N. J. Members of the industry are urged to attend.

A luncheon, also open to members of the industry, will be held at 1 P.M. At the luncheon, several pioneer enforcement officials will be called upon to say a few words. It is expected that Dr. Alvin J. Cox, former chief, Bureau of Chemistry, California state department of agriculture, and Dr. C. C. McDonnell, former chief, insecticide division, office of marketing services, U.S.D.A., will be among those to speak.

NSSA Eastern Meeting

The eastern regional meeting of the National Sanitary Supply Association will be held at the Park Central Hotel, New York, December 4th and 5th. Detailed plans are not yet available but a meeting committee was appointed September 30th as follows: Martin Peters, Moore Bros. Co.; J. Kepler, Kepler Bros.; Jacob Kahn, Windsor Wax Co.; Lester Brown, I. Ed. Brown Co., Jack Gantz, Empire Brush Co.; H. B. Berenson, Majestic Can Co.; and Leo J. Kelly, executive secretary of the NSSA.

Goodhue Joins Phillips

Dr. L. D. Goodhue, who left Airosol, Inc., Neodesha, Kans., August 1, has joined the research department of Phillips Petroleum Company, Bartlesville, Okla. Airosol, Inc., which was one of the first companies to start the manufacture of aerosol insecticides, is now out of the insecticide business.

Dr. Goodhue played an important part in development of the aerosol program in the armed forces during the war in his position with the Bureau of Entomology & Plant Quarantine, U. S. Dept. of Agriculture, Beltsville, Md.

DR. L. D. GOODHUE

Haskell Joins Klenzade

Dr. William H. Haskell, for many years senior sanitarian with the U. S. Public Health Service, recently joined Klenzade Products, Inc., Beloit, Wis., manufacturers of chemical specialties and equipment for dairy and food sanitation. The company also announced recently the opening of a new branch office and warehouse shipping point at Brownwood, Texas. The new organization will be known as the Klenzade Texas Co., Brownwood, and will be under the management of Lester N. Nelson.

Rolstead Heads Gopher Co.

Marvin J. Rolstead was recently elected president of the Gopher Chemical Co., St. Paul, Minn. Mr. Rolstead formerly operated as manufacturers' agent and distributor in that city under the name of the Staid Company. The latter firm has been absorbed by Gopher Chemical and will act as a distributing unit for household chemical products through jobber, chain and department store channels. Gopher Chemical specializes in water treatment chemicals and plans to expand its operations in the industrial chemical line. Mr. Rolstead has been well-known in the insecticide and chemical specialty fields for some years in connection with the sale of raw materials.

Clay Schroeder Resigns

McLaughlin Gormley King Co., Minneapolis, announced in September the resignation of its vice-president and sales manager, Clay L. Schroeder. Mr. Schroeder found it necessary to withdraw from some of his activities due to ill health. However, he will continue to handle the sales of aerosol pyrethrum extract for McLaughlin Gormley King Company.

The company also announced the appointment of Paul D. Torpin as sales manager. Mr. Torpin has been in the employ of McLaughlin Gormley King Co. as assistant sales director for many years and is well known to a large portion of the insecticide industry. In the past, he has specialized in agricultural insecticide sales; but now will be in charge of all sales.

Offer New Bactericide

Continental Asbestos and Refining Co., 1 Madison ave., New York, has announced a new bactericide, incorporating quaternary ammonium compounds, which is said to destroy bacteria without boiling or heating, even in dilutions as high as 1 oz. to 2 gals. The product is recommended as a rinse for restaurant and hotel dishes, cutlery and glassware.

NAIDM Baltimore Meeting

The National Association of Insecticide and Disinfectant Manufacturers will hold its annual convention at the Lord Baltimore Hotel, Baltimore, December 1, 2 and 3, 1947. Final program plans were not complete at press time but Melvin Fuld, Fuld Bros. Co., Baltimore, in charge of the program, stated that most of the details would be worked out during October.

Ups Toxaphene Output

A substantial increase in the supply of "Toxaphene," chlorinated camphene, available for 1948 agricultural insect control was announced October 1st, by Hercules Powder Co., Wilmington, Del. The first step towards increased production will be the completion, during October, of an expansion of Hercules' Brunswick, Ga. naval stores plant which will more than double the present rate of Toxaphene production. Additional facilities are expected to be completed early in 1948.

Penick Story in Post

An interesting article on S. B. Penick & Co., New York, appears in the October 11th issue of *Saturday Evening Post* and is titled "Sandalwood to Ant Eggs."

The author, J. D. Ratcliff, tells of the company's worldwide search for various raw materials for insecticide and perfume bases, fixatives and essential oils, and of the company's outlets for finished products. The history and growth of the organization are related.

Hooker Adds to Sales Staff

John M. Glaze has been transferred to the New York sales office of the Hooker Electrochemical Company. During the past year he has been associated with the sales department of the home office in Niagara Falls. A graduate chemist of Dartmouth, Mr. Glaze joined Hooker in 1942 as a research process foreman and has also been associated with the purchasing department. His territory will include portions of the metropolitan area in both New York and northern New Jersey.

Hochstadter Labs Move

Hochstadter Laboratories, Inc., New York, recently announced removal to larger quarters at 128 Water St., New York.

National Labs New Plant

National Laboratories, Inc., Toledo, recently purchased a new plant at 4934 Lewis Ave., Toledo, giving the company the opportunity for considerable office expansion as well as an addition of 30,000 square feet of plant floor space. The company manufactures an all-purpose cleaner, "N-L Concentrate," in addition to a liquid toilet bowl cleanser, "Vani-Sol Bowl Cleanse."

FTC Surveys Mothproofers

The Federal Trade Commission is now considering calling a trade practice conference to establish rules governing advertising and other practices of manufacturers of mothproofing agents. Earlier this year the investigation division of FTC completed a three-months' survey of trade practices in the mothproofing field. Its findings point up the probable need of trade practice rules for this country, an official of the fair trade practice conference division of FTC stated. Among the claims under question is one regarding the lasting properties of some of the mothproofing agents.

Market "Gold Seal" Polish

"Gold Seal" glass wax, a new glass and metal polish, was introduced in Chicago last month with full page newspaper advertisements. Made by the Gold Seal Co., Chicago, the product is recommended for cleaning windows, windshields, glass light fixtures, porcelain, silver, brass, chrome and other surfaces. Quarts are priced at 98 cents and pints at 59 cents. Distribution will be through department, grocery, paint, drug and hardware stores.

New Sanitary Supply Firm

W. E. Schlichte and John C. Henricks have recently formed a new sanitary supply house, Industrial Chemical and Supply Co., Tampa, Fla. The new company will manufacture its own sanitary supplies under the name, "Pelican Brand." Laundry chemicals and industrial cleaners will also be distributed. Mr. Henricks has been associated with the sanitary supply business for many years in Nashville, Tenn. Mr. Schlichte has spent twelve years in the Cincinnati and Memphis offices of Diamond Alkali Co.

Sanitary Firm Expands

Industrial Service Specialties Co., Quebec, recently completed its first year of business and has announced expansion in its line of specialized floor maintenance products as well as washroom accessories. Among the products handled by the company are deodorizing blocks, liquid wax, cleaning soaps, paper towels and cups. H. S. Lougheed, manager, was for over seven years branch sales manager for G. H. Wood and Co., Toronto. Six years of this time were spent in Quebec City, where, in 1946 he started the new company.

New Termite Product

The Lewis Co., 232 Canal st., New York 13, has announced a new non-inflammable liquid termite eradicator, said to kill termites in every stage of development.

NEW PLANT FOR ROCHESTER GERMICIDE: Shown here is an artist's drawing of the new plant of Rochester Germicide Co., Rochester, N. Y. With floor space totaling over 100,000 square feet, it has a private New York Central rail freight siding and excellent accommodations for motor freight loading.

Pest Control Meeting Oct. 27-29

MEMBERS of the pest control industry will meet in Philadelphia October 27-29, 1947, for the 15th annual convention of the National Pest Control Association, to be held at the Bellevue-Stratford Hotel. The convention is expected to offer to those attending considerable opportunity to discuss their problems in a first-hand manner with chemical equipment and supply houses and be brought up to date by the latest findings of both government and industry.

E. R. Jennings, Guarantee Exterminating Co., New York, is chairman of the national committee, taking up the work which was so ably started by the late John G. Vogel. Martin T. Meyer, Theo. Meyer Estate, Phil., is chairman of the Philadelphia committee.

Among those addressing the meeting on Monday morning, October 27th, will be J. Harvey Sturgeon, president of the association and William O. Buettner, secretary. The rest of the morning's program will be devoted to reports of the regional vice-presidents, committee reports, and a business meeting. The afternoon will be given over to talks on the future of the pest control industry, at which time E. R. Jennings, will preside.

The program for Tuesday morning will include talks on fly control, water- and flame-proofing, pigeon control, sanitation and consultation. During the afternoon, a symposium on sanitation in relation to the pest control industry will be presided over by William Buettner. Dr. Israel Weinstein, New York City health commissioner, will speak on "How Can the Pest Control Industry Better Serve Food Establishments," and Robert C. Stanfill, Food & Drug Administration, Philadelphia, will discuss "Responsibility for Food Plant Sanitation Under the Federal Food, Drug and Cosmetic Act." "Meat Packing Plant and Pest Problems" is the title of a paper by Dr. R. M. Mehurin, chief of the laboratory section, meat inspection division, Bureau of Animal Industry. "Inquiries made to the U. S. Fish and Wildlife Service and Recommendations Submitted Relative to Rodent Control" will be discussed by Walter W. Dykstra, U. S. Fish and Wildlife Service, Washington. During this discussion, Dr. James C. Munch, Munch Laboratories, Upper Darby, Pa., will offer observations about Antu, and Dr. Robert J. Huebner, U. S. Public Health Service, Washington, will discuss "Rickettsialpox." Tuesday evening will be spent visiting the booth exhibits, and later there will be a stage show in the ballroom.

J. HARVEY STURGEON

The meeting Wednesday morning will be of a business nature. In the afternoon, Professor H. Frings, Penn State College, will discuss "Ultrasonics as a Possibility in Pest Control." This will be followed by a discussion on equipment problems presided over by Dr. Arthur L. Brody, Pioneer Exterminating Co., New York. During this discussion, Eugene J. Gerberg, Insect Control and Research Laboratory, Baltimore, will discuss "The Theory Behind Spray Equipment Designs and Engineering Required to Get Spray Quality Desired." John F. Benham, executive secretary, National Sprayer and Duster Association, Chicago, will discuss "The Spray Equipment Industry." The last event on the program will be the annual banquet to be held Wednesday evening.

Building Maintenance Show

A new exposition of building maintenance supplies will be held for the first time this year at Grand Central Palace, New York, Oct. 27th to Nov. 1st. The show is expected to interest purchasing agents, property owners, building superintendents and others in the New York area, but will not be open to the general public. The exhibitors at this show will be furnished with a list of registered guests. The members of the industry will be informed of the exposition by an intensive direct mail campaign supplementing the invitations being sent by exhibitors. The exposition is said to be the first one of its kind ever held, and is under the management of Arthur Tarshias who, for many years, was vice-president of Lefcort Realty Holdings. Tickets for the show may be obtained by writing Mr. Tarshias, Building Maintenance Supplies Exposition, Suite 205, 36 W. 42nd St., New York 19, N. Y.

NAIDM Exhibit Shown

The educational exhibit sponsored by the National Association of Insecticide & Disinfectant Mfrs. was shown at the annual trade show of the National Institute of Governmental Purchasing held at the Pennsylvania Hotel, New York, during the week of September 8th. Among other exhibitors at the NIGP show was Victory Soap & Chemical Co., Brooklyn.

Lambert Names Pauley

Alfred W. Pauley, Jr. was recently named purchasing agent for Lambert Pharmacal Co., St. Louis. Mr. Pauley, who has been associated with the company for the past ten years, has been assistant purchasing agent since 1942.

Changes Name to Conco

Consolidated Chemical Co., Dallas, has just reported a change of name to Conco Chemical Co.

Pictured here is the exhibit of the "Excelcide" system of insect and rodent control by Hugé Co., St. Louis, as displayed at the National Confectioners' Association meeting held in Chicago recently. Insecticides as well as hand and portable spraying equipment were shown at the exhibit and a paper and moving picture on sanitation were presented by Dr. Parker, a consultant of the company.

New Products At Nopco

A new series of cationic surface active chemicals is now in production by Nopco Chemical Company, Harrison, New Jersey. Known under the trade name "Nopcogen," these products possess unusual physical and chemical properties, attributed to the combination of fatty nuclei and nitrogenous chemicals. The higher molecular weight members of the series show an increasing degree of basicity and have an improved and more complete dispersibility in acid mediums. Some members of the series exhibit complete solubility in waxes, petroleum and vegetable oils, and numerous organic solvents.

An unusual property of these surface active agents is one in which the oil phase of an emulsion is made substantive to cellulose. In insecticides, agricultural sprays and the fatliquoring of leather, the substantive quality of these materials is a most desirable property. Nopco is now in production on its "Nopalcol" products, a series of nonionic emulsifying agents. These surface active agents are long chain ethylene oxide polymers of fatty acids, the "Nopalcol" emulsifiers are used in cosmetics.

Being nonionic, the "Nopalcol" materials are not affected by hard water, salts, or dilute acids which usually cause instability when soaps, sulfated oils, or sulfated fatty alcohols are used. The outstanding feature of these compounds is the flexibility of their chemical and physical properties due to alteration of the length of either the fatty portion or the ethylene oxide polymer.

Pacific Chemical Expo.

The Pacific Chemical Exposition is being held at the San Francisco Civic Auditorium, October 21 to 25, 1947 and is running concurrently with the Pacific Industrial Conferences. The Pacific Insecticide Institute is one of the participating organizations.

NSSA Regional Meetings

Over two hundred were in attendance at the central regional meeting of the National Sanitary Supply Association held September 11th and 12th at Detroit's Fort Shelby Hotel.

The meeting's stress was on education and featured a talk by Dr. J. J. Davis, chief in entomology, Purdue University, Lafayette, Ind., on new types of chemicals, and pest control as it applies to the sanitary supply dealer. Papers from the meeting will be published in early issues of *"Soap."*

The western regional conference of the association will be held at the Roosevelt Hotel, Hollywood, Calif., Nov. 12-13th. In addition to a full business program, special features will be provided such as tours of the moving picture studios, guest appearances of movie stars and a social program including a cocktail party and banquet.

The southern regional conference of NSSA was to open at the Atlanta-Biltmore Hotel, October 9th, continuing through Oct. 10th. John Walsh of Tesco Chemical Co., Atlanta, acted as chairman at the gathering, assisted by Erwin Zaban, Zep Mfg. Co., regional vice president of the NSSA.

This new liquid soap dispenser manufactured by Bobrick Mfg. Corp., Los Angeles, has the glass globe cemented directly into a black "Tenite" plastic body so that breakage and theft are minimized. The dispenser is of the push-up type with spring-loaded Tenite valve which releases a measured amount of soap.

Nelson Scion In Advertising

James A. Nelson, son of Henry A. Nelson, president of the Chemical Supply Co., Cleveland, has opened an

JAMES A. NELSON

advertising agency in the Prospect-Fourth Building in that city under the name, James A. Nelson Advertising. The younger Nelson, recently released as a special agent of the Army Counter Intelligence Corps, was formerly associated with Fuller & Smith & Ross, Cleveland, well-known advertising agency. He was educated in advertising, artwork and journalism, and has had several years experience in the graphic arts. He will specialize chiefly in direct mail and publication industrial advertising. He is a graduate of Hiram College, Ohio.

Controls Peach Tree Borer

Fine Organics, Inc., New York, has developed a white, crystalline insecticide for peach tree borer control, sold under the trade name of "Peach-Klor," which is chemically a chlorinated hydrocarbon. The material sublimes and its application is similar to that of paradichlorobenzene. Its action, according to field tests, is also identical to that of paradichlorobenzene. Peach-Klor is not only available in large quantities but is cheaper than paradichlorobenzene.

Hafer Heads Baker Sales

J. T. Baker Chemical Co., Phillipsburg, N. J. recently announced that G. B. Hafer as general manager of sales. C. H. Slater is assistant general sales manager and sales-manager of the five chemical divisions. The sales manager of the industrial chemical division is Harold Feuchter. Laboratory chemical sales manager is H. B. Rasmussen.

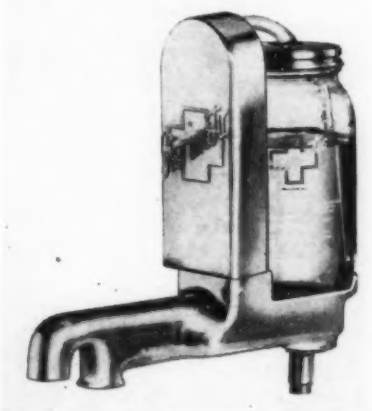
Sprays Fair with Chlordane

At the Iowa State Fair, held at Des Moines August 21-30, the grounds and buildings were sprayed with chlordane to control flies, chiggers, ticks, mosquitoes, ants, roaches, and grasshoppers. The grounds were sprayed by airplane with a Chlordane emulsion at the rate of two pounds per acre. Power sprayer crews treated all barns, exhibit halls, dormitories, eating places, garbage cans, toilets, and the entire midway area as well as the camp grounds, with a 2% Chlordane spray. Fair officials reported that the visitors were not aware that the grounds had been sprayed and that the comfort and sanitation achieved was exceptional.

Philip M. Frank Dies

Philip M. Frank, for more than 50 years head of the P. M. Frank Disinfecting Co., New York, died August 12th in Cedarhurst, L. I. He was 81 years old.

This new automatic germicide dispenser, being introduced by Murdock Distributors, Inc., Los Angeles, meters a germicide solution into rinse water in proper proportions as required by local health regulations. When the tap is turned on, the unit mixes, measures, and injects the solution into the water stream. A by-pass valve prevents solution from entering tanks for which it is not intended, allowing clear water to flow through a separate outlet. The amount of germicide solution is always visible.



Gen. Shadle Joins Hyman

Julius Hyman & Co., Denver, announced early in September that Brig. General Charles S. Shadle will

GEN. CHAS. S. SHADLE

join the company as vice-president at the expiration of his terminal leave about November 1, 1947. General Shadle's Army career spans a period of some thirty years. After the first world war he held various positions in the Army Chemical Warfare Service until his assignment in January 1942 to London as assistant military attache. During world war II General Shadle served as chief chemical officer, Mediterranean theater, on the staff of General Eisenhower.

Percy Magnus Named

Percy C. Magnus, Magnus, Mabee & Reynard, Inc., New York, was appointed in mid-September as head of the drug and chemical industry committee of the Police Athletic League, Inc., New York. Serving with him are Harold M. Altshul, Ketchum & Co.; Jean Despres, Coty's, Inc.; R. J. Prentiss, R. J. Prentiss & Co.; George Uhe, George Uhe Co.; J. J. Toohy, E. R. Squibb & Sons; Raymond Schlotterer, Essential Oil Association of U.S.A.; George Schneider, Celanese Corp. of America; and William Auchincloss, *Oil, Paint and Drug Reporter.*

John H. Neumann Dies

John H. Neumann, founder and former president of Neumann, Buslee & Wolfe, Chicago chemical importers, died August 28th at his home in LaGrange.

AIFA Re-elects Leonard

The Agricultural Insecticide and Fungicide Association named four new directors and re-elected its officers at the group's 14th annual convention at Spring Lake, N. J., September 2, 3 and 4. The new directors are Ernest Hart, president of Niagara Sprayer & Chemical Division, Food Machinery Corp., Middleport, N. Y.; A. W. Mohr, president of California Spray-Chemical Corp., Richmond, Calif.; George R. Rinke, president of John Powell & Co., New York; and F. S. Washburn, president of American Cyanamid Co., New York. Retiring members of the board are J. B. Cary, vice president of Food Machinery Corp., San Jose, Calif.; and Walter S. Gavan, American Cyanamid Corp., New York. Officers re-elected were George F. Leonard of Tobacco By-Products and Chemical Corp., Louisville, Ky., president; and Lea S. Hitchner, executive secretary and treasurer, with headquarters in New York.

Speakers at the meeting included Dr. P. N. Annand, chief, Bureau of Entomology and Plant Quarantine, U. S. Dept. of Agriculture; Dr. George C. Decker, entomologist, Illinois Natural History Survey, Champaign, Ill.; Harry Reed, chief, Livestock Branch, Production and Marketing Administration, U.S.D.A.; Dr. W. G. Reed, chief, Insecticide Division of Livestock Branch, Production and Marketing Adm., U.S.D.A.; Maurice H. Lockwood, president of National Fertilizer Association, Washington, D. C.; Harry Babcock of the Federal Trade Commission; and John A. Bird, Associate Editor, *Country Gentleman*. An industry forum discussed the future outlook of the pesticide trade from the standpoint of production and availability of raw materials.

It was brought out that the industry must broaden its base of service through increased promotion of weed killers, seed treatments, hormones and defoliants, and to find greater uses for present materials.

Advances at Owen-Illinois

Several promotions in sales assignments within the glass container division of Owens-Illinois Glass Company were recently announced. Eugene Hildreth, sales manager to the food industries, has been appointed sales promotion manager succeeding Kenneth C. White. Sidney Davis, Chicago branch manager, has been selected to succeed Mr. Hildreth as sales manager to the food industries. E. F. Schafer, Philadelphia branch manager, has been named to the newly created post of general branch manager in Toledo. He is being succeeded in Philadelphia by Wesley Adams, Philadelphia branch salesman. Decision to combine the closure and plastics sales divisions has resulted in the appointment of Joseph Parks as manager of these divisions and Leonard Phillipps as eastern district manager.

Correction on Ampion Note

In the September issue we published a news note that Ampion Corp., Long Island City, had purchased machinery, laboratory equipment and inventories from Eagle Soap Co., Brooklyn, that the vice-president of the Eagle Soap Co. had resigned, and that Leonard B. Schwarcz had become owner of all stock in the company. This is an error, for it was the vice-president of Ampion Co. who resigned and Mr. Schwarcz, president of Ampion Corp. is now owner of all stock in that organization.

Mr. Schwarcz has not been connected in any way with Eagle Soap.

Gates Joins Rheem

G. Wesley Gates has been named manager of container sales, eastern division, for Rheem Manufacturing Co., New York. He succeeds A. H. Campbell who has resigned. Mr. Gates joined Rheem in 1942 and during the early years of the war served as an expediter for the company and later was assigned to Washington to do liaison work. In June 1946 he was named assistant manager of container sales in the eastern division. Prior to joining Rheem, Mr. Gates was sales supervisor of the New England division of the Hershey Chocolate Corporation, Hershey, Pa.

DR. L. B. HITCHCOCK

Chemical Ass'n to Meet

Plans to hold two meetings of the Commercial Chemical Development Association have been announced by Dr. L. B. Hitchcock, president of the association. Dr. Hitchcock, vice-president of Quaker Oats Company, Chicago, stated that the association is concerned with the problems and marketing of new chemicals and the problems of expanding the market for manufactured chemicals. The Fall meeting has been set for October 28 in Cleveland and is under the local chairmanship of Robert H. Kittner, vice-president of the Glenn R. Martin Company. A March 1948 meeting is also planned.

CSA Ends Golf Season

The final golf tournament of the 1947 season of the Salesmen's Association, American Chemical Industry, New York, was held Thursday, September 18th, at the Essex Fells Country Club, Essex, N. J. There were 220 for dinner, 142 golfers and 76 guests.

Twenty-eight prizes were distributed. The Chemists Club trophy was won by Paul Dunkel, Paul Dunkel & Co., who also won low gross prize of the day. Other prize winners were: low net (flight A.) Bob Hutchins, Commercial Solvents Corp., (B.) Bill Hannum, Jr., *Chemical Industries*, and (C.) Sid Craven, Joseph Turner Co. Low gross winners were: (flight B.) E. W. Biederman, Mutual Chemical Co., and (C.) Art. Wheaton, Jr., Croton Chemical Co.

INDEX TO ADVERTISERS

*For further details see announcement in 1947 SOAP BLUE BOOK

Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

Tale Ends

ARE you a soap shampoo manufacturer who sells for less than five cents over your cost? If so, you are just plain nuts! This we have on the authority of a leading light for many years in the potash soap racket. You can now classify yourself, gentle reader, by the direct application of this simple, easy-to-use formula!

* * *

In the lace-curtain scouring powder field, we note that Old Dutch Cleanser really is giving "activated seismotite" a full-scale advertising whirl!

* * *

Recent wide newspaper publicity of sanitary laxities in eating and drinking places in Massachusetts,—only seven per cent of places examined met state requirements,—has been a great stimulus to the sale of odorless disinfectants in and about Boston and other New England cities, says Gordon Baird, head man of Baird & McGuire of Holbrook, Mass., and NAIDM vice-prez. The clank of a jail door is a convincing sales argument!

* * *

Last week, a friend of ours sold ten cases of fly spray pints and went off on a two-day bender to celebrate! Probably some dealer covering ahead for the 1952 season.

* * *

Why is all this caustic soda going to the Argentine, enough to supply their soap makers for the next ten years? This one was shot at us recently by an irate soaper and when we pleaded innocent, he answered his own question. "For trans-shipment to Russia,—like we sold Japan scrap iron ten years ago!" Ha! Just as we suspected, gentle reader, a fascist hiding away in the soap industry!

* * *

Fred Hogg, Hercules naval stores sales mgr. who has been laid up for the past six weeks with a heart ailment, is back on the job at his Wilmington office. But, says Joe Dolson, fountain head of industrial division news, Fred will have to take it easy for a while whether the Hercules silent, strong man likes it or not.